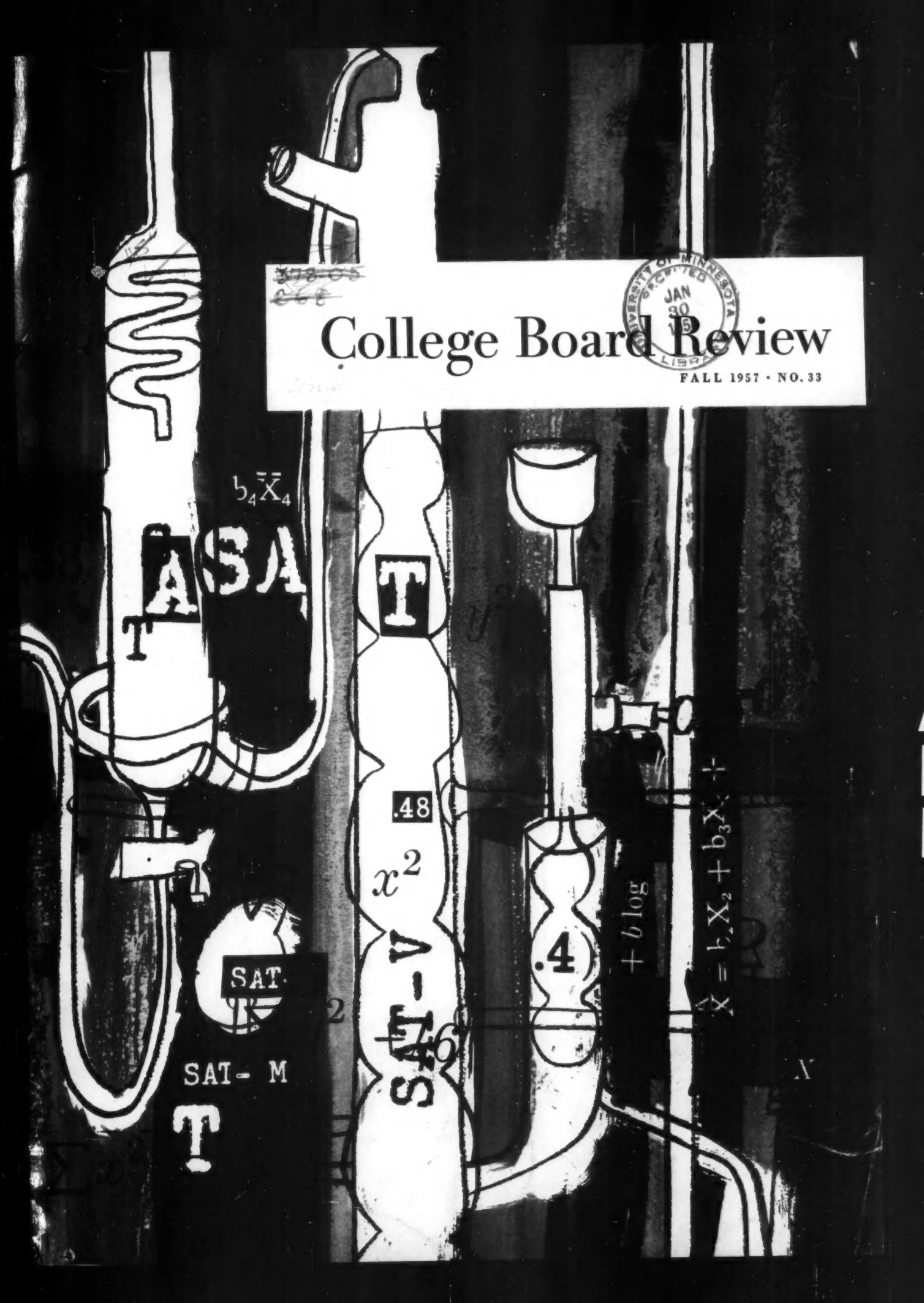

College Board Review

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The College Entrance Examination Board is composed of 205 member colleges and 34 member associations. Each member college has two representatives on the Board. Member associations have from one to six representatives. Members and their representatives are listed in the *Report of the President*. Meetings of the Board are held on the last Wednesday in October.

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College Board Review

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Contents

News of the College Board, 1

College Board Research Notes, 2

Assignments for future research
by Judson T. Shaplin, 5

New directions in College Board research
by Joshua A. Fishman, 9

Science education and the liberal arts
by John E. Burchard, 13

Differential prediction in college admissions
by Paul Horst, 19

You can *get into college*

False alarm in the press
by T. Leslie MacMitchell, 24

College candor can dispel confusion
by John M. Duggan, 24

Students are rejecting colleges
by John F. Gummere, 25

Equalizing scholarship opportunities
by Wallace McDonald, 29

Members of the College Board, 33

News of the College Scholarship Service, 34

Illustrations: Scientific apparatus and mathematical symbols emerge from blue depths of abstraction in Dan Shapiro's cover design on the theme of "Research," contrasting with his antique treatment of ancient subjects on pages 13 through 18. All other illustrations, including the lively symbolic depictions of growth which ornament the issue's two articles on research, are the work of Stanley Wyatt.

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NEWS OF THE COLLEGE BOARD

Fall meeting

Board incorporated: Representatives of 179 member colleges and 32 member educational associations of the College Board assembled in New York City on October 30 for the first meeting of the Board since its chartering in April by the University of the State of New York as a non-profit, incorporated membership association. The change in legal status, undertaken in recognition of the increasing scope and complexity of the Board's operations, preceded by one month the adoption of temporary By-laws by the Board of Trustees, successors to the Executive Committee, and the appointment of staff officers. The present Trustees and officers, including those elected and appointed since last spring, are listed on the opposite page. The By-laws were formally adopted by the members at the October meeting.

Score release approved: Concluding a series of discussions and committee recommendations presented over a period of several years, the Board voted on October 30 to give schools and colleges complete discretion in the release of Scholastic Aptitude Test and Achievement Test score information to their enrolled students beginning with the tests administered in December 1958. Existing score reporting regulations, which will remain in effect throughout the 1957-58 academic year, permit the disclosure of scores to students who take the tests in their junior school year but require that senior year scores be considered confidential by the schools and colleges which receive them.

The possibility of making their scores available to senior candidates has been supported on the ground that freedom to communicate this information would not only assist school officers to guide students in their college choices but reduce misunderstandings about the use of the scores in the admissions process. Objections to the release of scores have cited the difficulty of explaining to students the meaning of the scores and their relation to admissions decisions which include consideration of other important criteria of selection. The proposal approved by the Board included the appointment of a subcommittee on the preparation of materials to assist schools in score interpretation and clerical processes.

The Board's affirmative action followed the submission and rejection of several plans, among them one which would have reported test results directly to candidates on a score scale less precise than the standard scale of 200 to 800 points, which would have been retained for confidential reports to schools and colleges.

A year ago the Board approved an Executive Committee recommendation which noted that "the present score reporting system may no longer be defensible on technical, practical, or moral grounds," and provided for (1) study of the existing scale with a view to possible revision, (2) use of the scale finally adopted for reporting test results to both colleges and schools, (3) granting colleges and schools complete discretion in the release of score information to candidates, and (4) continuation of the present method of reporting scores in the meantime. When the Committee on Examinations recommended that no change in the present score scale be made, this recommendation was embodied in the Board's decision to give colleges and schools complete discretion in the release of score information to their enrolled students beginning with the tests to be administered in December 1958.

Regional groups to meet: Regional meetings of the member colleges similar to those held last year will be scheduled later in this academic year at the request of members interested in a detailed discussion of Board activities and problems. The customary April meeting of the full Board will not be held in 1958.

Testing dates: The Scholastic Aptitude Tests will be administered six times and the Achievement Tests four times in 1958-59, following the pattern schedule for 1957-58. The dates are:

Tests	*1957-58*	*1958-59*
SAT and AT	Dec. 7	Dec. 6
SAT only	Jan. 11	Jan. 10
SAT only	Feb. 8	Feb. 14
SAT and AT	Mar. 15	Mar. 14
SAT and AT	May 17	May 16
SAT and AT	Aug. 13	Aug. 12

The Advanced Placement Examinations, which are given once a year, will be administered in 1958 during the week of May 12-16.

The annual Scholarship Qualifying Test, taken last October by more than 250,000 boys and girls seeking to qualify for sponsored scholarship awards, has been scheduled for October 21, 1958.

Additional information on the Scholastic Aptitude Test, Achievement Tests, and Advanced Placement Examinations is available in bulletins which may be obtained by writing to College Entrance Examination Board, Box 592, Princeton, N. J., or Box 27896, Los Angeles 27, Calif. Information on the 1958 Scholarship Qualifying Test will be distributed to schools and colleges in the spring.

New members: Twenty-one colleges and one educational association were elected to membership at the fall meeting of the Board, increasing the number of members to 205 colleges (listed on page 33) and 34 associations.

The new institutional members are

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American International College, Colorado College, Georgia Institute of Technology, Hampden-Sydney College, Keuka College, Lake Erie College, LaSalle College, Mercer University, Muskingum College, Nazareth College (N. Y.), Northeastern University, Saint Joseph's College (Pa.), Sarah Lawrence College, Shorter College (Ga.), Southwestern at Memphis, Thiel College, University of Georgia, University of San Francisco, Valparaiso University, Wabash College, Western College for Women. The requirements of membership include accreditation by appropriate regional educational associations and regular and substantial use of the Board's tests and other services.

The New York State Counselors Association is the new member association.

Candidates Reply Date

150 colleges subscribe: The Candidates Reply Date for 1958, the earliest date by which participating colleges can ask candidates to reply to notifications of admission or financial aid offers, will be May 21. The 150 colleges which will observe the date are indicated on page 33.

This agreement permits candidates to consider all acceptances before making a final choice of college. Students who reach a decision before May 21, however, should be encouraged to notify the college of their choice as soon as possible, as well as to inform other colleges from which they have received acceptances.

Test interpretation director

Duggan appointed: John M. Duggan, assistant dean of freshmen at Yale University from 1953 to 1957, has been appointed Director of Test Interpretation of the College Board. He will advise schools and colleges on the use of Board tests and the interpretation of score information.

Dr. Duggan is a graduate of the College of the Holy Cross and received the master of arts degree and the doctor of philosophy degree in educational psychology from Yale. He has taught at the University of Bridgeport and at the Canterbury School, New Milford, Conn. His work at Yale included the development of a reading study habit program and of a screening test of reading ability.

Publications

New editions: Publications recently issued by the College Board include a new edition of *The College Handbook* ($1.50) and the *1957 Supplement to College Board Scores No. 2* ($1.50).

The *Handbook*, published in September, contains descriptions of 184 of the Board's member colleges, including their degree programs, admissions requirements, student expenses, and financial aid. The *Supplement* is a companion volume to *College Board Scores No. 2*, the basic manual on the use and interpretation of the scores, and provides the most recent information on student test performance as well as Scholastic Aptitude Test norms for transfer (college sophomore) students and much new data resulting from studies of candidates who have taken Board foreign language and mathematics tests.

These publications may be ordered from College Entrance Examination Board, Box 592, Princeton, N. J., or Box 27896, Los Angeles 27, Calif.

COLLEGE BOARD RESEARCH NOTES

Test validities studied

TDA's *vs. regular program:* A detailed report of validity studies of the experimental Tests of Developed Ability has been prepared by Dr. Marjorie A. Olsen of the Educational Testing Service. The studies compare the predictive power of the TDA's (of which there is one each in science, social studies, and the humanities) with that of the Scholastic Aptitude Test and Achievement Tests for liberal arts and engineering curricula at various College Board member colleges.

Compared to the three-hour SAT alone, the total six-hour TDA battery is slightly superior with respect to the prediction of overall college freshman grade average for liberal arts curricula. This is true whether or not high school record is used as an additional predictor with either the TDA's or the SAT. For predicting freshman average in engineering curricula, however, the TDA's are not much better than the SAT alone. Moreover, for engineering curricula the TDA's are not nearly as good as any three Achievement Tests alone which include at least one science and one mathematics Achievement Test.

Compared to the current six-hour, combined morning (SAT) and afternoon (three Achievement Tests) program, the TDA's and the current full program prove to be quite evenly matched in predicting college freshman grade average for liberal arts curricula, with a slight edge in favor of the current program. But for engineering curricula, the combined program of SAT and three appropriate Achievement Tests is clearly superior to the TDA's in predictive validity.

Further TDA *evaluation:* The above findings on TDA validity, as well as a number of others reported by Dr. John W. French of ETS in a study of the characteristics of students scoring high and low on the various TDA's, will now be evaluated by a special subcommittee of the Board's Committee on Examinations. This subcommittee will consult the Board's Committee on Research and Development and various school and college representatives in considering whether or not the TDA's should be included in the Board's testing program and how they might be intro-

duced if approved. The report of this subcommittee is expected in the spring.

Four-year SAT *prediction:* Dr. French also recently completed a study of the predictive validity of the SAT with respect to four-year college grade average. Although the SAT is used by most Board member colleges to help select applicants on the basis of predicted freshman average, the question has often been asked whether the SAT would be equally useful in predicting the four-year college average. In general, Dr. French's study, conducted at a number of member colleges, reveals that the SAT is roughly as good a predictor of four-year college average as it is of freshman-year college average.

As part of this study of the SAT, Dr. French also investigated a number of item-types different from those currently employed in the SAT to determine whether any of the newer item types would increase the validity of the SAT as a predictor of four-year college average. His findings suggest that test items dealing with general cultural background material would significantly improve the SAT in this respect.

Board members analyzed

Sociologist reports: "Board Member Colleges: A Comparative Analysis" is the title of a research report prepared by Dr. Natalie Rogoff of the Columbia University Bureau of Applied Social Research. Her study was undertaken in order to answer questions posed by two Board committees concerning the nature of the institutions of higher education currently Board members.

Dr. Rogoff's report is divided into three sections. The first presents data concerning all accredited institutions of higher education in the country, including information drawn from many published and unpublished governmental and independent sources on the number, size, regional and rural-urban distribution, curricula, structure, type of control, and tuition level of American colleges.

Predominant characteristics: In the report's second section, which is devoted to a direct comparison of member and non-member colleges with respect to each of the foregoing descriptive "variables," the report shows that member institutions, relative to all other institutions of American higher education, are in general a quite homogeneous group of colleges. Thus, member institutions to a much greater extent than non-member institutions tend to be privately supported, high-tuition, secularly controlled, liberal arts institutions.

There are, of course, a number of Board members that do not have these characteristics. In explaining their membership, Dr. Rogoff makes use of the anthropological concept of cultural diffusion and demonstrates that these members as a whole are situated in geographical proximity to institutions that do possess the characteristics which predominate among member institutions. This second section then examines the diffusion of Board membership along regional, rural-urban, and other dimensions.

Indices of distinction: The third section of the report examines distinctions among Board member institutions, attempting to define clusters or subgroups of Board members with respect to three novel variables: an *index of applicant ratio* (the ratio of number of applicants to size of freshman class), an *index of attainment* (based, in part, upon mean SAT scores of applicants for admission), *and an index of student involvement* (based, in part, upon per cent of students living on campus).

Early and more recently elected Board members are contrasted with respect to certain of these indices and the distribution of the entire membership on these three indices taken two at a time is also presented. These distributions are also related to distributions in accord with the older variables for describing colleges, such as structure, control, and region.

As is customary in Board-sponsored studies intended for general distribution, no individual college is identified by name in this report. Copies are available on request to the Board at 425 West 117 Street, New York 27, N.Y.

New projects

College success factors: Among the many new research projects begun this year are two that will be conducted by members of the Board's Committee on Research and Development.

Dr. Irving D. Lorge, executive officer of the Institute for Psychological Research and professor of education at Teachers College, Columbia University, has undertaken an exhaustive search for criteria of college success other than course grades.

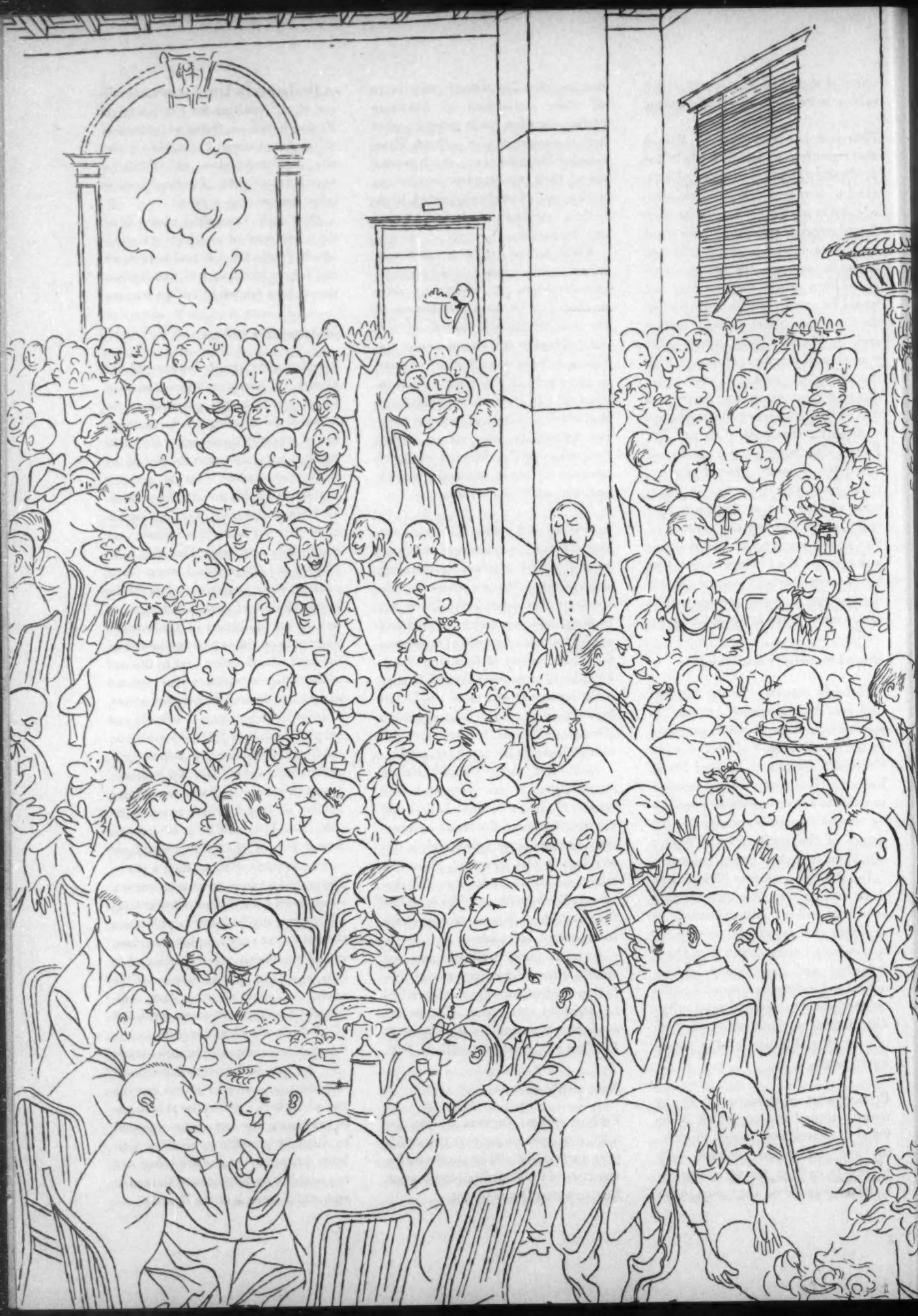
Dr. Paul F. Lazarsfeld, chairman of the department of sociology at Columbia, has undertaken to review research and theory in the area of non-intellective factors related to college success.

SAT transfer norms

Local studies aided: Because of the growth of junior colleges—many of which are primarily preparatory for senior division college work—the number of students transferring from one institution to another at the end of the college sophomore year is growing rapidly. With this growth the problem of interpreting end-of-college-sophomore-year SAT scores has become constantly more pressing. The *1957 Supplement to College Board Scores No. 2* contains some preliminary data for the interpretation of such SAT scores, as well as an indication of the average score gain on the SAT (from the end of the high school senior year to the end of the college sophomore year) related to the magnitude of the original scores.

In order to make more reliable and exhaustive data of this kind available, the Board would like to undertake end-of-sophomore-year follow-up studies of admitted college freshmen involving a number of four-year and two-year institutions. Tests will be provided and scored free of charge to institutions willing to participate in such a study, and end-of-sophomore-year scores will be reported back to them. Cooperating institutions will be asked to administer the SAT to the entire sophomore class, or to some designated proportion of it, and to submit a name roster of the sophomore class showing each individual's previous SAT score at the end of his high school senior year.

Colleges participating in such a study will, in effect, be helped to derive local end-of-sophomore-year norms for the SAT which they will then be able to use in evaluating the SAT scores reported to them by transfer applicants. Colleges interested in participating are requested to communicate with the Director of Research of the Board.



BY JUDSON T. SHAPLIN

Assignments for future research

My aim in this article is to be a prophet, to look at the problems which face college admissions officers in the decade or so ahead, and to suggest some of the research needs which will be generated by these problems.

I am not going to deal with the everyday difficulties of the admissions director, the problems of increasing numbers of applications, of multiple applications, of opening new territories, and the public relations problems which accompany wholesale rejections.

In selecting topics for discussion I have felt free to explore any area where the admissions officer has influence, and I will therefore deal with problems of standards, curriculum, and a definition of objectives, as well as with problems of selection and prediction.

First I want to consider the general problems of standards, in both college and secondary school. Readers will all be familiar with the statistics of the current crisis in American education: the increased birth rate, the bulge in school population, the increased demand for a college education, the ever-increasing shortage of teachers—now a college problem as well as a school problem. It is easy, in the press of work, to tend to think of these problems as short-range and temporary ones. I want to suggest that these are long-range problems which will be with us for a lifetime and longer and therefore call for basic and dramatic changes in our educational structure if we are to preserve any kind of acceptable standards. Looking ahead, I must predict an almost inevitable decline in the quality of instruction in our schools and colleges.

One of our problems has been the absence of benchmarks. We haven't had ways of testing whether the high school and college students of this generation have learned more or less than the students of past generations. We need benchmarks, standards if you will, to tell us where we are going. In the present national manpower crisis in many occupational areas, we must be able to substantiate our claim for more and better teachers by showing what is happening to the learning of our students. We must be able to report not only on enrollment figures, teacher supply and demand, shortage of classrooms, and the rate of new construction, but also upon changes in the rates of learning based upon agreed standards, both in school and college.

To do this calls for a research program of large dimensions. We must clarify the objectives of secondary education, of the college preparatory program within the secondary school. We must ask these questions: What basic elements of instruction should we expect to be constant between decades? What levels of achievement should be expected for groups of students with different objectives, including the college-bound student?

Setting school standards

We have assumed that the time for testing is at the end of the high school career, or at least at a time convenient for the college admissions officer. We have come to depend upon a few tests, notably the Scholastic Aptitude Test, and as more colleges of more diverse character have joined the College Board we have expected the SAT to do a bigger and bigger job. We have limited ourselves to a few hours of testing at an inconvenient time for the schools, and we ask the tests to do too much for us. Schools traditionally give many tests at a variety of time intervals. The admissions officer makes little use of this information because of the bewildering variety of tests and the impossibility of developing from them standards which apply to his institution.

We must bring order into this process. We must develop tests which give the schools some measure of their own

Serving as dessert to the morning's addresses and as appetizer to the afternoon business session, luncheon at the annual meetings of the College Board finds representatives of the member colleges and associations in a genial mood, here informally sketched by Stanley Wyatt.

standards, and give the colleges standard criteria for selection which are based on a reasonable sample of the student's time and program. The Advanced Placement Program is doing, in one specialized area, just the kind of thing I am suggesting might be done on a broader base.

I am not impressed with the argument of many schoolmen that they must preserve their traditional autonomy, their right to develop the local school program within the bounds of their own resources. My prediction is that their resources will become increasingly limited and that we had best pool resources in planning programs and testing accomplishment. Also, the forces favoring local autonomy and the resulting diversity are so strong in our society that the establishment of common standards is an uphill fight at best, and even a strong program will challenge local autonomy in only limited ways.

Let us now turn to the question of standards for the colleges. The college admissions officer's task would be enormously simplified if he had a few simple criteria about his own college which he could apply. As the admissions process becomes more selective with an increasing pool of applicants, colleges will be able to set minimum performance standards for their students in various programs and courses. Research in each institution will be required to establish these standards. Somehow the colleges must look at themselves, define their characteristics more clearly, define their basic objectives, and their strengths, all in operational terms subject to testing and measurement.

This process must not be left to the intuitive judgments of admissions officers and the vague, "global" concepts which now guide our admissions procedures. For example, the current concept of the "well-rounded student" may be just a façade behind which individual prejudice can operate—it can be used to maintain ethnic and religious balance, to allow the admission of low-aptitude athletes, to admit the well-bred "paying guest" with the stamp of mediocrity. In short, such concepts provide no measures and shift with the wind, the composition of the admissions committee, and the persuasiveness of the admissions officer.

Let each college establish its benchmarks, its standards of excellence in certain fields, its expected requirements—all as an aid to the school counselor and student who now face the dilemma of making a sensible choice on the basis of the "huckster" type statements of the colleges. Let us make it possible for them to choose on the basis of known standards, known areas of strength, known social characteristics.

If we are to maintain standards of instruction and learning, indeed if we are to have any hope of improving the quality of education under crisis conditions, the next decade must see the invention of new social arrangements in our schools and colleges. The fever is already in the air. Various adaptations of the use of television in schools and universities are being tried and proclaimed successful. There is talk of "teaching teams," clerical aides, and a host of similar ideas.

New teacher resources

Such schemes as the above have several characteristics in common: emphasis on placing more responsibility upon the able, experienced teacher with corrollaries of higher remuneration, extension of the influence of the able teacher to larger numbers of pupils, incorporation of less experienced and less well-trained personnel under the guidance of the able teacher, and re-evaluation and adaptation of the curriculum to the new personnel relationship.

It seems clear that the schools will tap new sources of personnel through the use of part-time teachers, specialists from other occupations, interns being trained as teachers, and many others. Colleges will be seeking teachers with no training beyond the bachelor's degree, will certainly seek to recruit more women into college teaching, and will draw on undergraduates themselves for teaching assistance. An infinite number of ways of organizing the new personnel are possible. It is clear, however, that existing arrangements which provide conditions of virtual autonomy for the individual teacher must change when we recruit

personnel with less training, less experience, and perhaps less ability.

It seems to me that the college admissions officer has a vested interest in any innovation which may affect the quality of instruction, and that he is in a position to influence the directions which new programs take. In the United States we tend to move into new things with enthusiasm—our plans move and expand. Fads sweep the country. We are addicted to programs of action, our enthusiasm sees success in every move; rarely indeed do we establish an experimental design which allows us to say what factors lead to the change, and we usually describe the process of change only after having failed to establish the initial conditions by pre-test.

The membership of the College Board and the Educational Testing Service are in a unique position to ask that all new programs include some of the elements of experimental design in their plans, and to provide research personnel and services to assist in the process. We must be in a position to answer the questions: What effect does this new program have on learning by students? What factors in the program were the main determinants of change in learning?

Answers to these questions require more than the measurement of achievement. We must also be concerned with changes in attitude, in the measurement of motivation under varying conditions, in the definition of specific objectives of the experiments, and in the selection of appropriate elements

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Judson T. Shaplin, associate dean, Graduate School of Education, Harvard University, delivered this address at the October 30 Board meeting.

of the curriculum. In short, we must identify the elements which have long-range, stable value for the improvement of instruction under new conditions, so that we can make *lasting* changes. We must avoid makeshift, opportunistic changes calculated only to meet day-to-day problems, and which can only lead step by step to a decline in the quality of instruction in both school and college.

A major social change is taking place in our schools, which for several generations have been absorbed with the problems engendered by the philosophy of providing equal opportunity for all. They have been under enormous social pressure to provide expensive programs for vocational education, for handicapped children, and a host of other special interests. During the past decade, however, there has been a swing of interest toward the gifted child.

Why this change? I am sure most of you heave a sigh of relief and say, "It's about time!" Clearly, critics of the schools during the past decade have made a strong impact, and our schools are responding to the challenge of their criticism. Clearly also, significant manpower shortages, particularly in fields demanding a knowledge of science, mathematics, and modern languages, have opened our eyes to critical needs in our society.

More recently, and in ever clearer and more demanding tones, the voices of parents are being heard: "Does my child have the ability to go to college?" "Is he doing well enough to get into college?" "How am I going to get him into college?" Parents are being told that because more and more students are going to go to college and more and more want to go, the colleges are going to be crowded and it will be more and more difficult to get into college. The college admissions "fever" is rising so high that parents are asking these questions as their children enter school, and their demands for change become increasingly fervent.

The College Entrance Examination Board has had a part in this development, first by its enlarged membership with increasing responsibility for selection procedures, secondly by its sponsorship of special programs such as the Scholarship Qualifying Test, the Advanced Placement Program, the Commission on Mathematics, and others. A recent report by Charles R. Keller on the Advanced Placement Program[1] illustrates the accelerating pace of this particular program:

"What was in its first operating year, 1953-54, a project involving 18 schools with about 500 students taking approximately 900 examinations and going to 94 colleges has become three years later a venture involving 212 schools with about 2,100 students taking 3,800 examinations and going to more than 180 colleges." Dr. Keller rightly described the program as "a rising sun that I see in the field of education," and this is only one of many programs reaching far down into the elementary schools, demanding the separation of our schoolchildren into ability groupings with special provision for the "able and ambitious students."

I see immediately two significant research responsibilities for the College Board proceeding from this development:

1. We cannot sit back and receive the able students as they come to the point of college selection. We have a responsibility to see that the "right" students are chosen for these special advantages. This means that the Board's research interests must be directed

toward selective instruments and procedures at younger age levels than the Board has been concerned with in past years. Able children are now being chosen by a variety of tests and performance records. What is the quality of these instruments? How well can we predict the future performance of a 10-year-old, a 14-year-old? Can we cut through the obfuscating effects of previous inadequate training, restricted home environment, and poor motivating attitudes toward school?

A corollary problem is the increasing number of applications being received by the independent schools, traditional college preparatory schools with the facilities and specialization to provide for able students. These schools need the same kind of help in developing improved selection procedures at earlier ages.

2. The second research problem is perhaps more complicated and requires experimental design. Can we be sure that the new advances we record are due in part to the study programs we develop, or are the results due entirely to the fact that we are dealing with bright individuals who would arrive at the same level under the old arrangements? Have we established any comparison controls in the Advanced Placement Program, and other programs, or are we just zooming ahead? As the program expands can we continue to be sure that superior teachers present superior materials to superior students?

As we divide children into ability groups and provide special opportunities for the able and ambitious, we must ask ourselves the question: Are we really selecting by ability or are we selecting those who have already had special advantages and privileges? Several recent studies show that we have gone far down the track of creating social class barriers within our schools and colleges, and that the barriers will solidify and expand under the recent social changes I have been describing. Richard G. King recently stated that "at no College Scholarship Service college do as many as half the scholarship winners come from the neediest half of our nation's population."[2] Horace Mann Bond, president of Lincoln University, has shown that the chances of winning a National Merit Scholarship are astronomically in favor of the children of professionals, managers, and so forth, compared with service workers, farmers, and laborers.[3] A glance at the list of 38

[1] "We are *not* neglecting our able and ambitious students," speech delivered by Charles R. Keller, Director of the Advanced Placement Program of the College Entrance Examination Board, at the July 11, 1957, meeting of the Education Institute at the State University Teachers College, Cortland, New York.

[2] "Financial thresholds to college," *College Board Review*, No. 32, pages 21-24.

[3] H. M. Bond, "The Productivity of National Merit Scholars by Occupational Class," *School and Society*, September 28, 1957, page 267.

schools labeled by Robert F. Marschner as our "best" schools on the basis of having 20 or more National Merit Scholarship finalists in the last two years[4] tells us that these are specialized city schools or schools in our economically and educationally favored suburban communities.

How are we going to preserve the traditional social class openness of our schools? Preserving this openness is not only our obligation, basically to humanity, but it is also good strategy. If we don't preserve an open system, the pendulum will swing back as angry parents appeal to local school boards sensitive to the demands of local citizens.

Consider the problems of racial integration. The use of tests can have a double face: they can be used altruistically to select the best qualified; they can also be used to exclude the undesired, particularly when the undesired have had social and educational disadvantages. I understand that tests are now being used to maintain segregation within presumably integrated schools, and that admissions standards in some colleges are being raised to keep the proportion of Negro students low, even though underprivileged whites will be similarly affected.

And what of that large group of students in every school, the able students who are not interested in college, whose attitudes are unfavorable to schooling? We are told that for each student in college there is an equally able contemporary not in college—and that the major reasons for this are a result of attitude as well as money.

Our research must be directed toward these problems. It seems to me that we must establish transition zones in both school and college. We must develop techniques for identifying the "potentially able." Once identified, we must develop special programs designed to influence their attitudes, to stimulate their interests, and to create in them an understanding of their own ability and future potentialities.

We now have very little systematic knowledge about the effect of intensive instruction on the underprivileged. In general, we now ask them to sink or swim in the general competition. We must gamble some of our college scholarship money on the potentially able and provide a transition zone of intensive instruction, not just counseling and guidance.

Non-intellective research demands

As a parallel to the "track systems" of the comprehensive high schools, let us develop a "transition track" for the potentially able, a series of carefully designed research programs to answer some of the basic questions of *how* this intensive instruction can be done most effectively and for what type of students. In this we will be dealing with research problems of motivation, of basic attitude and orientation, as well as the more traditional aspects of aptitude and achievement.

As we look at the expanding college population ahead it seems strikingly clear that the major expansion of facilities will take place in institutions under public auspices, our municipal and state colleges and universities. Rising costs of education will accentuate the strong present trend toward enrollment in the local public institution; these colleges will be faced with inundation. They will be overpopulated, their facilities will be overworked, as in the public schools in the past. It seems likely also that we shall see in these institutions, as we have in the public schools, a proliferation of programs of all sorts, many vocational in nature, to meet the *needs of all the students.*

Can we afford to be as wasteful of both money and talent as we have been in the past? Can we afford to admit all who ask admission, and fail so many in the competition? Can we allow so many to wander so long among the intricate patterns of our institutions, each trying to find his place, his reason for being there?

I believe we cannot. We must seek clarification of purpose within our colleges, the development of program criteria so that school counselors may operate with reduced guessing. Our research must be directed increasingly toward problems of differential prediction.[5] Can we predict what students have the combination of qualities for success in the various programs and fields of concentration offered by the colleges? Can we select those students most able to benefit from the special qualities and strengths of the colleges?

On the whole, however, we have tended to do very little about influencing the flow of students into different areas of study, either by selection or counseling. We have tended to concentrate instead on the prediction of academic success by academic criteria, and the analysis of broad interest patterns. Very little work has been done on attitudes toward basic values, work orientation, orientation toward social problems, although this would of course be treading on dangerous ground. The whole field of the measurement of non-intellectual qualities raises many moral questions. However, it seems to me that we will not be able to provide effective assistance to students, prevent human waste, and further the purposes of our institutions unless we come to a clearer definition of those purposes and of the values and attitudes associated with them.

Readers may feel that I have greatly expanded the area of research responsibility and functions of the College Entrance Examination Board and its affiliates. Obviously, the task is so great that the Board can play only a small part; these are some of the research needs of the entire field of education. But we need research leadership. The Board, through its research affiliations and its contract research, can help in the process of establishing models for research, for development, and for programing.

In characteristically American fashion we are headed for vast social change like a juggernaut. The College Board can be a calm voice, asking significant research questions, introducing planned change which calculates the consequences. As an influential agency concerned with standards, it can hardly escape this responsibility.

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[4] "Best Schools," *Scholastic Teacher,* November 8, 1957, page 1.

[5] An article on differential prediction begins on page 19.

BY JOSHUA A. FISHMAN

New directions in College Board research

What benefits are derived from the College Board research program? How does it operate, and how does it relate to the Board's role on the American higher education scene?

The related issues of purpose, process, and role of research could of course be discussed in the context of tried and true testing studies such as those concerned with the improvement of current programs and their use. However, it will probably be of greater interest to consider these issues against a background of less traditional kinds of studies—studies which have slowly increased in number and in scope during the past two years in response to three main stimuli: (1) problems and needs of the Board's membership; (2) changing conditions of college-going; (3) findings and interpretations derived from research.

The needs are directly or indirectly communicated not only to the research staff, but to the entire Board staff, which is constantly in contact with representatives from member and nonmember institutions through correspondence, visits, attendance at meetings of educational and professional associations, and participation in many committee deliberations. Specifically, the Board research committees (the Committee on Research and Development and the Committee of Examiners on Aptitude Testing), though primarily selected for research interest and ability, are also consciously constituted to provide a reliable channel through which the research needs of both secondary schools and colleges will be communicated to the staff.

From all these sources, a very strong and widespread interest in non-intellective factors related to college functioning has been repeatedly communicated to the Board's staff. The essence of this need seems to be that the more adequately and the longer we select or guide candidates on the basis of intellective ability and achievement, the more necessary it becomes to make further distinctions between individuals who are intellectively at about the same level but who differ with respect to attitude, interest, types of motivation, "personality" characteristics, and so on.

College environments study

Five projects in this non-intellective factors area are currently being pursued with Board support and others are being planned for the years ahead. In one of these studies, for example, C. Robert Pace, chairman of the department of psychology of Syracuse University, is attempting to construct instruments for use in describing college environments. A college may not be unlike a little world unto itself, with a culture and traditions, with expectations and rewards, with values and norms. When we talk about "college success" we need to keep in mind that this is not a culture-free entity, but that each student's success, or lack of it, transpires in and is partially a by-product of his interaction with the unique environment of a specific college campus.

Dr. Pace's approach to environmental descriptions is a novel one. It is derived from a particular brand of personality theory, and the environmental index which he has devised is directly related to a number of recent personality scales for describing individual personality needs which his colleagues have constructed. If we can conceive of the individual as describable in terms of measurable personality needs (for example, needs for order, autonomy, nurture, understanding, or play) and of institutions as exerting pressures or as presenting features gratifying or frustrating these needs, then it becomes easier to appreciate Dr. Pace's project. It is not at all necessary to adopt the view that only those candidates should attend a given college who can easily adjust to (or fit in with) its environmental pressures to realize that the more meaningfully we can depict this environment, the more meaningful will be our decisions as to how to relate this information to admissions and other problems.

This study is just one example of the long-awaited reorientation of personality research to the needs of higher education. Progress in this area will be beset by difficulties but it is reassuring to note that the Board now has a well-balanced program of non-intellective factors research, one which attempts to attend both to long-range needs for deeper understanding of the entire area as well as to short-range needs for immediately useful tools.

Board-supported research also results from needs other than those directly communicated by Board members. It may arise out of rapidly changing conditions of college-going of which member institutions are aware only insofar as they are individually affected and to which they may be sensitive in a restricted and at times even atypical way.

Much has changed in college-going during the past decade. Whole sectors

Joshua A. Fishman, Director of Research of the College Board, presented this report at the Board's fall meeting on October 30.

of the college-age population that would not have actively competed for college attendance 10 or 15 years ago —whether as a result of social or academic disadvantage, or both—are very actively concerned with college admission today. The entire structure as well as the dimensions of scholarship and other aid programs have also changed radically during this period. What implications do these interacting changes have for the Board? There have been implications with which the Committee on Membership has sought to cope; there are implications which are the major concern of those who guide the budget and the fee structure; there are major Board programs that are completely involved in these rapid changes in college-going—for example, the College Scholarship Service—as well as new services still waiting to be born which might alleviate serious problems of guidance and multiple applications. These widespread and rapid changes in the nature of the college applicant group have also had repercussions on the very keystone of the Board's tests—the Scholastic Aptitude Test.

New demands on the SAT

The SAT was perfected during a period of the Board's history when the percentage of applicants scoring below 400 or above 600 was both stable and low. The per cent of candidates scoring below 300 or above 700 was not only extremely small, but the necessary administrative decisions as to their college-going were also relatively clear. For these very reasons the SAT was so constructed as to yield its most dependable measurement in that range of scores within which most of the candidates fell, in the only range which still might require careful administrative judgments. Thus, classically, we have been very concerned that the difference between a score of 475 and another score of 500 be as dependable as we could possibly make it (for in some colleges the latter score might be judged "inadequate" and the former, "adequate"), but we were not similarly concerned about the dependability of the difference between scores of 700 and scores of 725 (since both scores were clearly and unquestionably "desirable") nor were we, for what seemed to be equally obvious reasons, concerned with the dependability of the difference between scores of 275 and 300.

Recently all of this has abruptly changed. While wanting to retain fully the accuracy of measurement in those score regions which have always possessed it to a high degree, we now also want similar accuracy in those extreme

high and low score regions with which we once were not overly concerned. The difference between a score of 700 and another of 725 today may mean the difference between a scholarship or no scholarship. Tomorrow, when half a million applicants for scholarship aid may present themselves for testing, the accuracy of measurement will be much more important than it was two or three years ago when only one-fifth that number of candidates competed for awards. Similarly crucial guidance or admissions decisions may now hang upon the score difference between 275 and 300 for here, too, a rapidly increasing number of candidates is being tested.

As a result of these far-reaching changes in college-going, all compressed into a span of a very few years, the SAT must not only stretch from 200 to 800 as it always has, but must have no thin spots within this range. Can a new SAT be designed to meet the extreme pressures placed upon it—pressures which no single instrument has had to face before? This is a very crucial problem. For the last year and a half a very complex research project has been in progress at the Educational Testing Service directed towards its solution. By the end of the current academic year, we expect to know whether a single SAT built in accord with new specifications can give adequately dependable measures along the entire scale—or whether it may prove necessary to split the SAT into two slightly overlapping sections, each concentrating on a different region of the score scale, with candidates routed to the one or the other by a special preliminary test on which research is already in progress.

Still another source of stimulation for Board-sponsored research are the findings and interpretations that are derived from research conducted by individual researchers and agencies throughout the country, indeed, throughout the world. The behavioral science research community is a large and a productive one. Although only a small segment of this community is now devoted to research related to secondary or higher education, findings from this segment, as well as from completely unsuspected and even improbable sources, often feed back to and stimulate Board-sponsored research. One of several studies to have arisen from such scientific advances is that just begun for the Board by John B. Carroll, associate professor of education, and director, Laboratory for Research Instruction, Harvard University.

Dr. Carroll's study is in the general area of foreign language mastery and foreign language testing. Foreign language specialists have frequently observed that the types of language achievement that current language tests sample usually fall short of including a form of language skill that native speakers commonly display unconsciously; namely, a familiarity with the structure of the language. Here it is important to distinguish between *structure* and mere rote memory of rare vocabulary or esoteric grammatical irregularities. If such a distinction can be sharply drawn, then it should also be possible to distinguish between students who have progressed beyond the prodigious retention of linguistic minutiae to an intuitive intimacy with a genuinely implanted set of language habits. This concern with structure is derived from the application to language behavior of a relatively new field of inquiry which has come to be known as "information theory."

Test item-types constructed in accord with this approach call upon the examinee's acquired stock of habits relative to what may be called the "statistical contingencies" of a given language. Continuous texts in a language can be shown to exhibit many kinds

of statistical regularities which differ from language to language. For example, the probability that a given noun will follow a given adjective in certain contexts is very high. (Thus, in English, the nouns "woman" and "girl" are more probable after the adjective "beautiful" than are either "man" or "boy," as in a different context "song" or "poem" would be more probable after "beautiful" than either "novel" or "editorial.")

Testing language subtleties

The native hearer of spoken phrases or the reader of a text will therefore develop expectancies as to what is going to follow any given part of the text. The more nearly an examinee's proficiency is at the native-speaker level, the better he will be able to predict how to complete a given context or to fill in a gap.

The gap to be filled may either be prefixed, infixed, or suffixed to the material supplied. The amount of material presented and the *amount* of material required to be given can both be studied as experimental variables, together with the *nature* of the texts (newspaper, literature, technical, etc.). The "correctness" of a response in such an examination will be only of a probabilistic nature. It will usually be true that several alternatives can be supplied, but the response will be scored either in accord with what actually occurred in the text from which the item was drawn, or in accord with the guesses made by a criterion group of native speakers of the language in question. By utilizing such methods of testing derived from "information theory"—provided their reliability, validity, and cost are improvements over their counterparts for current testing approaches in foreign languages—it may be possible both to sample higher and more subtle levels of foreign language proficiency as well as express proficiency in terms of the extent to which near-native competence is achieved.

In order to be in a position to benefit from research breakthroughs, or even to make use most effectively of the forefront of methodological and substantive progress in the behavioral sciences, the Board needs a research staff that is itself well situated in the community of behavioral scientists so that a connection may be established and maintained between the needs of the membership and the resources of psychological, educational, and social research. The staff has attempted to establish such a connection and to maintain two-way communication through it. On the one hand, behavioral scientists—from anthropology through psychometrics to sociology—are kept informed of the needs and concerns of the Board's membership, and on the other hand, they are invited to seek Board support in addressing themselves to these needs.

The information that the Board is interested in studying—the multiple application problem, or the related problem of how high school students learn what about which colleges—is communicated to behavioral scientists through announcements in professional research journals, through regular visits on the part of the Board's research staff to the major research centers throughout the country, through their attendance at the national and regional meetings of the professional societies of behavioral scientists, and through their organizing and participating at these professional meetings in seminars, symposia, and reports on areas of research interest to the Board.

In the two years that the Board's active concern with research in the non-intellective factors domain has been known to behavioral scientists, some three-score tentative research plans have been received from prospective researchers throughout the country. Although only a very minor proportion of these has been adopted after scrutiny by the Committee on Research and Development, the result has been that the Board has a better picture of the state of non-intellective factors research today than it, or perhaps any comparable agency, has ever had. The fruit of this effort to maintain close contact with America's behavioral scientists is now maturing in work done on behalf of the Board not only at Educational Testing Service, but also at Columbia University, Harvard University, Fordham University, Syracuse University, the State University of Michigan, Vassar College, and the United States Civil Service Commission.

It is apparent that the three research stimuli which have been mentioned—membership needs, the changing nature of college-going, and research findings in the behavioral sciences—are very intimately related.

Thus, Board research, stimulated by changes in the quantitative or qualitative nature of the college applicant group, is but another variant of research addressed to the needs of the Board's membership. And if the staff attempts to maintain close ties with the behavioral science community in order that it may more quickly and reliably learn of new findings and points of view relevant to any of the Board's concerns, this attempt is justified by the fact that these findings and views may make it possible to improve current programs, institute new ones, or more generally, to meet more fully the needs of the members.

The nature of the research program has been thought of and presented to the membership in a number of ways. One way is to interpret research from the point of view of its products, the familiar "quality control instruments, interpretational aids, and basic psychometric research" approach.[1] Another is to interpret research from the point of view of the sources of stimulation for research activity. Still a third method is to ask, "What are the substantive or topical limits within which it is appropriate for the Board to conduct research?" Although some may find this approach helpful, I have come to be less and less attached to it during my two years at the Board because it may lead us too frequently to equate Board research with test research and with it alone. Undeniably, most of our research is and will remain in the area of testing cognitive ability or achievement, and in fact, we urgently need

[1]See H. S. Dyer, "Research Goals of the College Board," *College Board Review*, No. 22, page 413.

more and better test research as our colleagues are constantly on the alert to point out. However, to restrict the Board's research to test research would be to ignore the fact that the Board itself is no longer merely a central switchboard for arranging mutually convenient examinations.

The Advanced Placement Program is certainly more than a series of examinations; the College Scholarship Service, more than a computation service; the Commission on Mathematics is of fundamental importance to the American educational scene much beyond the type of examinations that may ultimately result from its work. The projected Commission on Admissions Procedures, the annual Colloquia at Arden House, the diversified publications program; in fact, the agenda of the Board meetings themselves, all of these are indications of the extent to which the Board, through the decisions of its membership, has outgrown the early and more limited concerns and functions signified by its title.

The Board has become a nationwide forum and action center for a more rational attack on the problems besetting the jurisdictionally vague "school-to-college transition" period. If, within these limits, the membership is concerned with predictive measures of general scholastic aptitude and of more specific subject-matter achievement, then this concern legitimately receives research consideration. If the membership is concerned with more rigorous and yet more encompassing definitions of college success than the frequently exploited grade-point average, then this concern, too, is legitimately subject to scrutiny by the methods of research now available to the behavioral sciences.

Attuned to members' needs

College Board research is thus substantively channeled in one way or in another, in accord with the concerns and pursuits of its members at any given moment in their history. This is a better way of characterizing what is and what is not within the bounds of the Board's legitimate research domain than is the use of such false dichotomies as "pure" versus "applied" or "theoretical" versus "operational." Many of the concerns of the Board are such that services or programs are instituted to cope with them. However, the *concern*, the *question* must come first; the answer, particularly the operational answer, appears later.

Research-wise, many of the concerns of the Board's members are now in relatively raw, untrodden areas, obscured by the vagueness and vagaries of human personality, motivation, and values. It is good that we are willing and able to move into these, but the move must be cautious, particularly with respect to operational implementation. For the time being, therefore, some Board research will result in more questions than answers and in reports rather than in services. During all of this time, however, the exploration of newer research areas will seek to continue to reflect the prevalent and relatively enduring concerns of the membership.

Thus, if it seems legitimate to use a fraction of the candidate's fee for a current research purpose, this is so because the current candidate is benefiting from tests, services, and information which past research helped make possible—research which often began quite a bit back from any immediate operational or narrowly applied "payoff."

Most Board-sponsored research is so basically related to our needs, to our schedules, to our emphases, that even where it appears to have substantial overlap with the interests of other groups, it is usually inappropriate to ask them for outside financial support. From time to time, various Board programs and research projects have been assisted by governmental and private sources. Though we must remain alert for possibilities of such outside support, it is probably safe to say that by far the major part of Board research will always need to be Board-supported. This is as it should be, for the Board is the direct and unquestioned beneficiary of the research. However, we do have the benefit of the advice and guidance of many of the country's most renowned behavioral science research specialists. These individuals eagerly serve on our research committees and their willingness to do so is an indication that our self-interest in research has not led to too narrowly defined issues without broader relevance to many areas of psychology, sociology, and education.

The College Board has followed most of the steps ascertainable in the study of the origin and development of institutions. There are precipitating factors leading to the birth of institutions (as well as concomitant factors retarding this birth). There are consolidating factors which come into play once the institution has broken through the difficulties which surrounded it in its earliest days. And finally, perhaps inevitably, there are debasing factors which lead to the termination of old institutions and to the precipitation of new ones. The second World War ended a period of relative consolidation for the Board. New factors affected American higher education and thrust the Board into a position of greater national involvement than ever before. These factors have led to a startling array of new concerns, new problems, new interests, and new pressures. The Board's willingness to meet them in novel ways has, perhaps, kept the Board from being "over-consolidated."

It is not my intention to imply that research is the panacea for all our ills. Research is a tool for studying ourselves, an aid in the decision-making process, and it implies a willingness to look for new means, for new answers, for new approaches. However, members of the Board family also have values other than research. These are our educational, our philosophical, and our religious values and convictions as citizens, as educators, and even as scientists. The Board's program is bound to change and research will change both with it and as part of it. Although our research will always need to coexist with our other values and goals—this coexistence should apply to the entire gamut of Board affairs, and not, it is to be hoped, only to testing or to some other narrowly limited segment thereof.

BY JOHN E. BURCHARD

Science education and the liberal arts

A timely consideration of the humanities and social sciences in scientific training in America, England, and Russia

A meaningful discussion of the role of the humanities and social sciences in the training of scientists and technologists ought to begin with some agreement as to what we expect scientists and technologists to do for our society. An ex cathedra pronouncement would not advance us much. From an answer to this question, worth discussion, most of the other answers may appear clearly.

Let me suggest some of the dimensions of the question. In England, I am told, about one-half of the graduates of Eton do not go to the university at all. This is not because they are not qualified for higher curricula but rather because they sense no necessity for further formal study. They go directly into business, and the differences between their later careers and those of men who have passed through the university en route to business do not seem substantial. In the United States every graduate of an Eton would go to some college, and most of them to the best universities; the difference in their business future would be noticeable.

Until recently, anyway, about half of the graduates of my institution, the Massachusetts Institute of Technology, finally settled down in careers related to business or industry reasonably remote from the technical competence they had presumably acquired. The world is changing and in the future more will no doubt stay strictly in their professional fields. But some will continue towards management goals. Very often, perhaps even usually, this technical competence gives them the opening wedge, and very often they have risen and will rise for a time in the exclusively technical ranks; but after a while, and often quite soon, they have moved and will move into areas where their specific technical skills are of no substantial importance save for the better intuition these may provide. Their personal traits, character, and judgment about more elusive and incalculable matters were and will be the important things.

If you do not believe, as I do not, that engineering subjects teach them how to think more clearly about nontechnical subjects than their colleagues who have had no technical training, then you are left with the notion that something else is at work. You may wish to question me as to why I am not convinced that proficiency either in mathematics or in the classics, the two conventional "disciplinary" subjects, is a guarantee of straight thinking in non-mathematical or non-classical situations. But the point for the moment is that the education for a substantial group which has such a destiny might conceivably be different from that for a group of which one knew that only a negligible number might ever leave their professional skill. I do not say it should be different at this point—I merely say it might be.

The practices in different countries, again up to now, are perhaps related to the apparent destinies of the men being educated. Continental systems in general have encouraged early specialization and rather complete specialization. Here let us be a little more detailed about the English-speaking countries.

In England, and to a very considerable extent in the other countries of the Commonwealth, the degree of specialization permitted on entering the university is extreme. There the argument goes that the public schools at least offer a strong base for the broad education of the individual in nonprofessional as well as in pre-professional matters and that this suffices. In the university a man may then spend all his time in professional and closely related subjects (all chemistry, for example). If his education in the public schools by any chance has interested him also in history or politics or music, he may of course attend lectures by first-class men in any of these fields; he may have the advantage also of cross-disciplinary talk with fellow students in his residential college. If on the other hand the exposure at the secondary school level has not awakened any such interests, there is really not much the university can do about it anyway.

The best products of this treatment are not only first-class scientists or brilliant engineers but also very often

This address was presented at the National Conference of Canadian Universities at Ottawa, Canada, in November 1956, as "The Role of the Humanities and Social Sciences in the Training of Scientists and Technologists," and is reprinted from *Canada's Crisis in Education* by permission of the University of Toronto Press.

show enormous human interest in and knowledge about most untechnological matters. These are the ones that usually come to see us in the States. I have met some others who have never cared for the extra opportunities, who were personally far from interesting or interested, however deep their technological skill.

There is still a great deal to be said for this point of view. The British secondary school *is* substantially more advanced than most of the secondary schooling of the United States, possibly even than all of it, as is sometimes affirmed. It must, however, in the final analysis deal with schoolboys and I would guess that most young men, however clever, can scarcely bring the same depth to a discussion of the problem of Hamlet at 16 as they might at 20, much less, at 24. If the ideas of the humanities are important and different, then surely some experience with them at a relatively mature level will be different and more rewarding than the earlier experience. All I want to suggest is that it may be too comforting to rely on the secondary schools for all the inspiration and formal training in nonprofessional subjects.

The second question is not whether the British plan is a good one for the best men. Obviously it has been. As Sir Richard Livingstone and I once agreed, sitting on a sunny bench in a courtyard of the Canberra hotel, it is very hard to ruin the best products of any system and by whatever course they reach the top, first-class people look remarkably alike in their overall quality by the time they have reached maturity. In a social system or a technological arrangement where only a few men are expected to achieve broad leadership outside the speciality, one can rely rather safely on the flotation process which brings enough men of maximum ability to the top. Whether this will remain the same in future years, with changes in the family background of students, urban life and so on, is another thing we might wish to discuss.

American engineering education

American engineering education on the other hand has, at least until recently, showed a sharp cleavage with scientific education. By far the largest number of scientists come from liberal arts colleges and universities. In the majority of these, although not always in the newer state-supported universities, there has been a strong distributional requirement quite missing from the British or Scottish university. This requirement can usually be met only in areas considerably removed from the major interest. So almost all the young men who are graduated, say, as physics majors have been required to elect a considerable body of subjects in the social sciences or the humanities, usually in both. The smaller number of scientists who are trained in technological institutes such as my own fall under the distributional restrictions imposed by engineers.

Engineers, unlike the scientists, are preponderantly trained in separate engineering colleges, part of the university but not part of the college of arts and sciences in which the scientists are being trained, or in independent institutes such as the California Institute of Technology, Carnegie Institute of Technology, and M.I.T. Owing partly to the pressure of our accreditation procedures and partly, I expect, to a tendency towards conformity in the "right" principles of education, almost all these curricula require that substantial time be devoted to subjects called by the awful phrase "socio-humanistic."

Ever since I can remember, and perhaps longer than that, committees of the engineering societies made up of responsible senior engineers have written reports demanding that the four-year undergraduate program in engineering devote approximately 20 per cent of its time to humanistic and social science studies. These committees doubtless had in mind the number of their colleagues called to nontechnological leadership and placed more trust than perhaps I would in the idea that such a distribution of education would prepare every one for such leadership. The engineering colleges, in response to this demand, have made some effort to meet it. Those institutions whose selectivity on admission permits them to omit from their studies some rudimentary mathematics and similar subjects which other engineering colleges have to teach come rather nearer to meeting the requirement.

Thus, the initial quantitative variations are large. By appropriate counting you can reckon that about 20 per cent of the programs at the California Institute and Carnegie Institute are in fact devoted to such subjects; 16 per cent is a more usual figure and has characterized M.I.T. and many others. But you can still find institutions in the United States where the quantitative requirement has been and may still be as low as 8 per cent.

But the quantities do not tell the entire story. Let me pass by the strong 20 per cent program at Carnegie Institute and the California Institute where the subjects are perhaps without exception of college grade. The facts will appear more clearly if I compare our M.I.T. program with that of another unnamed but well-known institution.

Each of us devotes 16 per cent of the curriculum to humanistic and social science subjects; we require every undergraduate to take one subject in such fields in each of the eight semesters of his normal undergraduate life. At M.I.T. the first four semesters are devoted to a careful study of eight serious human problems arising in eight different points of Western history. For each of the periods and problems a small number of great works written in the time are read in full, or in very large excerpts, and discussed intensely. There are ethical problems, political problems, social problems, religious problems. The works are by Thucydides, Sophocles, Aeschylus, Euripides, Aristophanes, Plato, Aristotle, Augustine, Aquinas, Dante, Joinville, Machiavelli, Shakespeare, Hobbes, Locke, and so on.

At the end of this common experience the student is expected to take four further elective subjects, at least three of which are to be in a single

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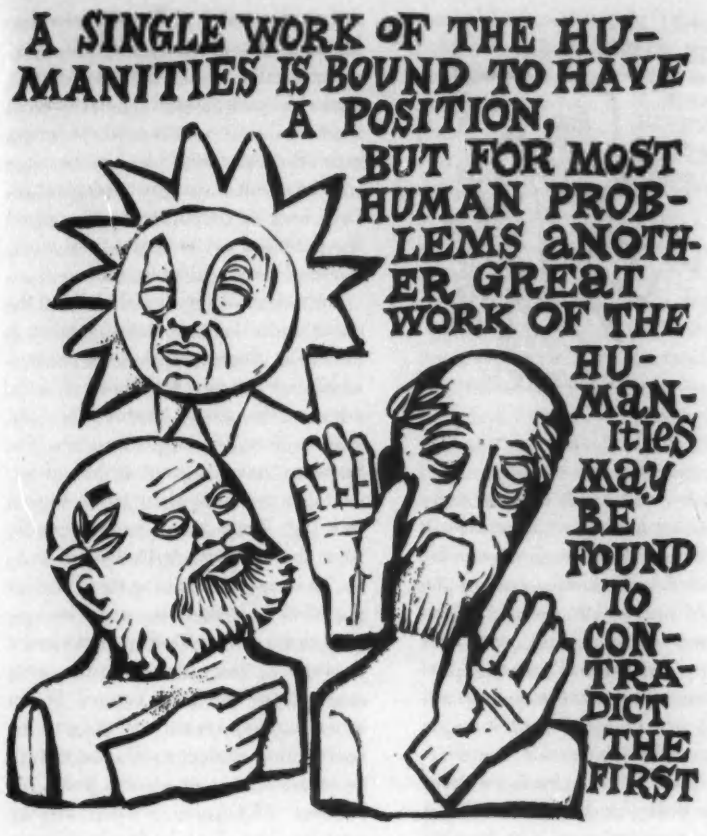
A SINGLE WORK OF THE HUMANITIES IS BOUND TO HAVE A POSITION,
BUT FOR MOST HUMAN PROBLEMS ANOTHER GREAT WORK OF THE HUMANITIES MAY BE FOUND TO CONTRADICT THE FIRST

discipline of the social sciences or humanities, subjects of mounting difficulty, taught by men who are themselves scholars of distinction and who often give graduate seminars and direct doctoral dissertations on one campus or another, including our own. Every subject is a content subject—no truly elementary subjects of sub-college level are permitted; the elementary two years of a modern language, for example, cannot be counted unless the student goes on to a use of the language in literature or history or philosophy. All this is serious; even the training in writing the English language comes not from composition courses but from detailed and persistent criticism of papers written in discussion of the works and topics which are the focus of interest at the time.

At the other institution mentioned, the same eight subjects may consist of two in English composition at a level that can almost be called remedial writing, four in Advanced Reserve Officers' Training Corps, and two in elementary Spanish. That these two 16 per cents simply do not represent the same thing is obvious. There is evidently, then, a far wider spread in practice in the United States than would appear from any statistical summary. The most recent report of a special committee of the American Society for Engineering Education, headed by Dr. Edwin S. Burdell, president of The Cooper Union, has for the first time grappled with the problem of quality within quantity and has said with as much positiveness as was perhaps possible that many subjects previously counted in this allotment simply had no right to be counted at all.

Meantime the leading programs, such as those at Carnegie, California Institute, and I believe M.I.T., have been steadily stiffened; they are by no means perfect but I would guess that though modifications may and probably will occur in content, it is unrealistic to expect much more quantitative requirement or much further increase in rigor. At the same time many other engineering schools are slowly upgrading their own programs in the direction pointed by the leaders. The movement is not at all retrograde as far as I can observe.

All this time I have said nothing at all about how 20 per cent was arrived at, whether it was the right percentage or not. It is a percentage that has been practicable up to now in the four-year curricula of these technological institutions with the highest admission standards. Whether it will remain so in the face of the exponential increase in what a useful technologist ought to know and in the face of the threat of a new educational system, I do not know. This too we might discuss. At the least it will require great educational insight and statesmanship.

The threat of course comes from the Russian system. It is established beyond doubt by now that the USSR is training a much larger number of technologists than the leading countries of the Western world, and that they have been foresighted enough to prepare for this program by training enough teachers beforehand; it is clear that their monolithic system lets them place the inducements where they are most needed so that the pay and other status rewards they accord to technologists and to the teachers of technology are sufficient to provide one of the carrots that our system of freer choice does not now permit. Russian industry is not competitive with the Russian university; it cannot threaten a faculty structure with higher inducements unless that is the will of the Kremlin. Russian students evidently do not have to be impressed into these subjects; the number of applicants for places is in proportion quite comparable to that of our best institutions because technical training is a clear way to the top in a country where there are not very many clear ways.

Signs of Russian prowess

For some time we discounted these numbers by imagining that the training was inferior and very over-specialized. Doubts are beginning to arise whether we have been right on this score, and these doubts have engendered fears. The fears may or may not be justified. The Russian society has

needs for vast numbers of engineers to bring about developments which have already occurred in the United States or Canada. It may be that the vast numbers of trainees are not such a threat to military supremacy as our fears imagine. But of course the safe belief is that they are such a threat.

It is possible also that the Russian training is so specific that the trained are able to do very well only what they have learned to do, that they may lack the ingenuity and imagination to jump to the next device. In this case and in a society where military technology moves as fast as it does today, this could mean that the Russians would always be well prepared technologically for yesterday's war. But this also is not a safe assumption nor is it entirely borne out by observations many American professors have made now that they have had a chance to talk with some of their Russian colleagues.

Now if we assume, as we must, that the Russian aptitudes for this sort of thing are at least as high as our own, when we learn that the Russian schoolboy has had many more years of serious study of mathematics and science than his American counterpart, when we observe that on the whole technologically trained men have higher average status than they have attained in the West (although there may not be many in the position of supreme social status as it is measured in the USSR), and when we know that the population of the nations of the Communist bloc offers a formidable reservoir from which to draw such talents, we are likely to be thrown into a panic. I think we have been thrown into such a panic, and I do not feel wise enough to judge, as readily as many have, whether the panic is or is not justified. (By November 7, 1957, events have made it perfectly clear that Russian science and technology have done wonders and justify for Americans the most sober reconsideration of their programs and a determination to do everything that is democratically possible, short of panic.)

It is fairly safe to predict that some countermeasures will be taken in the United States and I expect in Canada and Britain as well, although I would suppose the efforts in the Commonwealth countries would be less drastic than ours. I have no doubt that all the

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hue and cry will result in some early and much-needed improvement both in the secondary school requirements for science and mathematics and in the quality of instruction, both of which need a serious upgrading, even if it were only for general cultural purposes. I have no doubt that young men of talent are going to find it much easier financially to obtain a university education in the technologies than in other fields, perhaps may find it possible to get it free or even be paid to get it, and that they will emerge to jobs which will have many kinds of financial inducements far in advance of those offered on the average to men who still wish to worry about the law, about architecture, about painting or poetry. I view this with some apprehension, but not much, because the great achievements in the law or the arts or in science for that matter have not in my judgment been made by persons who chose these fields because they were inherently lucrative or secure but rather by those who found in them the most exciting intellectual and emotional challenges. Since progress rests mostly on the achievements of such an elite, I do not find this particular trend more than mildly discouraging; but by the same token I am not confident that it will turn up very many more top-flight men for science and engineering. (What can most securely be done is to make sure that nothing is permitted to impede the freest thinking and study by all the topflight men we have in the sciences and that they have available to them enough first-class helpers.)

That it will turn up some there is no doubt. I expect one of the reasons for the great painting of Renaissance Italy was that it was the aspiration of so many Italian country boys to work in a great Florentine studio; and so there must be in our countries many young men who really would be first class but who have not chosen technological careers because they have never realized the potential excitement in the work. Some of these will be found.

I am also not very worried about the situation so long as nothing more is done. But there are other temptations which might, in the face of fear, threaten the whole liberal arts component of engineering education. The Russians have a great technical advantage over us in their technological training. They know pretty exactly what they want their technologists to be. They are not training them against the off-chance that they may become leaders of companies, diplomats, newspapermen, lawyers, doctors, even members of the inner council of the Kremlin. They are not encouraging the engineering student to discuss history as objectively as we—to the point, for instance, of arguing whether Trotsky may not have been right about some things as we in the United States might now admit of King George III and his ministers. In short, they are not "wasting" 20 per cent of the student's time in these off-beat things of which it would be hard to assert that they have any real bearing on the technical skill the student may attain. Leaving out this component could save almost a year of the present curriculum in engineering. So far as I know there has been no statement yet by a responsible American engineer that we ought to do this. If the fear grows much greater I can only say that such suggestions will be inevitable.

Robots or leaders?

This then states the question as vividly as I can state it. What do we expect our scientists and technologists to be? Do we want them on the whole to be obedient servants, according to what their bosses—political, industrial, or military—ask them to do and be? Do we want them to accept consequences for their acts, to worry about the consequences, to be troublesome about these consequences, even to act on the consequences with more power than

the average citizen, more power because they know more of the potentials and because they have the capacity to do or not to do? Has anyone who worries about the effects of a strike of tugboat captains in New York Harbor contemplated what would result from a strike of physicists? This is a hard question. But it does bear perhaps on whether the humanities and social sciences have anything to do with the successful training of the technologist.

If the technologists are on the whole to be obedient and tractable but devilishly clever devisers of whatever the state wants, it is pretty clear to me that the humanities and social sciences are a waste of time. They will not make the technologist a more clever deviser, and any study of them will in effect simply delay the time when he has acquired the necessary cleverness in devising. We may get in trouble in a democracy if we try to eat our cake and have it too; if we say, in effect, by all means let us accelerate the training of a lot of technologists and then pay and feed them well so that they will work well; let us take a few carefully selected (never mind how) types and give them the wider exposure so that they may be the leaders of men. This would bring us pretty certainly to a system which could not be distinguished from that of the Russians, in which they have had large experience and must by now be becoming quite adept, and which we do not want anyway. We do not here have to try to be logical at all as to why we do not want it and I imagine we can take that as axiomatic without any appeal to "natural" law.

If we reject the notion of a selected elite we have some problems. They would of course be solved if we could believe that a base of strictly (and very skilled) mechanistic training would provide all the powers that help a perplexed man to arrive first at the will and later at some of the judgment needed to tackle complex situations. If we could believe that, then again we would have an easy and efficient course. We may not believe it but we cannot disprove it. I do not plan to try.

We ought to be quite clear here. It is not my belief that the humanities deal with values while science does not. Science has values and science has humanistic overtones. Science can train one to honor and to truth because the scientist more than anyone else rejects those who try to live in half-lights or perpetuate untruths. But by the same token science taken as a good by itself cannot on any philosophical plane provide any concern for the immediate human state. In the world of the galaxies the ephemeral human state is of supreme unconcern.

Yet in human affairs the human state is of real concern and it will hardly do for the sharpest minds of the time to refuse to look at it on the ground that they seek only the truth and that the consequences of the truth are of little concern to them. Scientists of course have been the most concerned that society should act wisely about the products of their science and have been excellent as Jeremiahs. They have been less effective as Moses's. Yet with the right education there is at least as much hope in finding a Moses among scientists who have absorbed the great truths of the humanities as among the humanists who have absorbed the great truths of the sciences; and at present, anyway, it is easier to find a scientist with some humanities than a humanist with any science. It is even easier to produce one, in view of the nature of scholarship in the two fields at the present time.

The humanities will not tell this kind of man how to act in a given situation nor advise him that he ought to act. They will not make him moral or immoral, for both morality and immorality are to be found in great works of literature and even in great works of philosophy. A single work of the humanities, if it has any stature, is bound to have a position but for most human problems another great work of the humanities may be found to contradict the first. Contrary to many assertions, the humanities as a whole are neutral just as science is.

If this is the case, what is to be gained by their study? If they provide no rules, what is there left? What is left is that the great human questions, all unresolved, are all matters of long debate, available on the records of men since the beginning of writing. They have been debated by little men for the most part but every so often they have been debated by great men. The ideas of great men are not ideas to be accepted as dogma but, rather, springboards for the personal dives which offer large release of energy. The opportunity exists in the humanities as it exists in nothing else to meet the great minds of all periods as they grappled with the great and recurrent problems. To dwell with these minds ought, and I think usually does, yield in the long run a more powerful personal philosophy than that held by the man who tries to run without them. They offer to every young person a faculty against whose brilliance and perception any existing faculty is small change.

More power in the humanities

Humanities of this kind and order are of course found in great books, though not necessarily in The Great Books. They are found in tragedies and poetry and some painting and in some history and in some philosophy. They are not found, as yet anyway and perhaps never, at least for me, in the same power in the social sciences which are struggling with a much more limited problem and yet a more penetrating understanding of the smaller problem.

I am obviously the victim of my education when I think that if the choice is limited it is better to have read Thucydides and Sophocles and Plato and Aurelius and Augustine and Aquinas, yes, and even Hegel and Kant, than it is to have read the works of the social scientists.

But there are other ways to approach these ideas. There are minds who cannot manage Dante at all, or even T. S. Eliot, and who find the Lyndes' description of Middletown or Lord Hailey's report on Africa clearer and more stimulating than Zola's

Germinal or Alan Paton's *Cry, the Beloved Country*. I have deliberately picked here, you see, four works none of which can actually be called great as we might use the word for *The Republic* or the *Commedia* or *King Lear*. For such people it is still possible, and I would guess probable, that the awakening may come from the right kind of study and writing in the social sciences, and there are important specifics dealing with world situations or national situations which can be used at least to amend the prejudices of men of science who act not as men of science but as men of common sense (a term they do not like) in nonscientific matters. For such purposes international studies, social psychology, and cultural anthropology are perhaps even more effective than any effort to have a penetrating look at the model building of the economists, but even this is a personal view.

If the humanities are to be looked at this way it is clear that the humanities must be taught largely. I do not mean vaguely. I mean that the works selected must really have some universality, that the teaching of them must be penetrating and yet sweeping. Our modern system of graduate training in the humanities does not encourage a young teacher to dare much in these directions. He has learned penetration and this is naturally better than the diffuseness that some famous teachers of another day permitted themselves. The risk is that he is learning to bore so small a hole that no one can really find it exciting or important to follow him in. This, it seems to me, is the great problem of humanistic specialization today. Most of the specialists are becoming bores. Samuel Johnson will not appear great at the hands of a Johnson scholar who spends more and more time on the second and third-class men who happened to live in Johnson's time. I realize that this is a bad example, since Johnson may not appear great anyway; and I am aware that the classics have a great advantage in this since so few mediocre works have on the whole survived.

I cannot prove all this and you do not have to accept it. Nor can I argue that it cannot be achieved by a first-class and determined mind without help. Almost anything can be so obtained. But intelligent and sympathetic guides help in any undertaking. The chance not to walk down too many blind alleys of the past, to come to grips early with the really powerful thinking of all recorded time, to be shown early how much is there that does not meet the eye, saves time for the human being who in any event has a limited life span. And indeed it may offer him a light to a path that he might never have found at all.

You can read *Antigone* for the story, and it is exciting enough. You can construe it as a special unhappy example of boy meets girl. You can think it is nothing but a struggle between youth and age, between tradition and change, between parent and child. It is of course all of these and it is more. At the end of life a man might recall Antigone or Lear and realize how much more had been there all the time. The humanities offer the opportunity to compress time, to adopt some of the painful experience of mankind vicariously. This is their importance. That they may give pleasure, solace, is an added boon. But that is not why we study them.

The scientist and the future

In the poignant debate between the tyrant Creon and his son Haemon the latter says, "Your frown is enough to silence their voice, but I hear whispers in the street at night." There is more in this than in many a book on industrial relations, on communications between the head office and the sales force; there is more there, as is so often true in science, than any common sense could tell us. But it can be overlooked in a careless study.

This is a fairly emotional statement of why I believe that the humanities and the social sciences have a solid role to play in the development of our young towards professions in science and engineering which will significantly affect our culture not only by their findings but also by the other operations of their minds. It is in training them to be querulous about everything and not only about scientific truths that we can make them the leaders and not the followers of men. I think the former is their proper role. But I want them to be querulous in the right way and not cost the world the advantage of their intransigence by naiveté. The humanities will not protect man against naiveté as the examples of many humanists will attest. The sciences will not protect man against naiveté as the examples of many scientists will testify. Combined, they may sometimes fail; but the man who has experienced both will have a better chance.

I had rather bet the security of the world on a substantial number of this kind of men than on a horde of skilled and obedient technicians.

BY PAUL HORST

Differential prediction in college admissions

System predicts grades in each of 33 subject areas; should replace single, overall predictions, author declares

There seems to be some confusion these days about the problems of college admissions. One gets the impression that a huge battle is in progress throughout the length and breadth of this fair land. On one side a vast, mighty, and persistent army of high school graduates is fighting savagely to gain admission to our colleges and universities. On the other side, a powerful array of admissions officers and other university administrative personnel is struggling valiantly to beat off the attacking legions. Can they forge sufficiently powerful weapons in the way of admissions devices to thwart the on-rushing hordes or at least to divert them to some other colleges more vulnerable to attack?

All this sound and fury about how to crash into college and how to keep students out of college strikes me as a silly and senseless kind of activity. Certainly it is true that currently our higher educational facilities are becoming seriously over-taxed and that the prospects for a still greater burden upon them are very real. As for the necessary physical facilities, however, is it possible that one of the most serious obstacles to a solution is the fear of local political bosses that their personal influence would be diminished as a result of federal aid to education? The problem of personnel resources is more serious but we probably have a long way to go before we have exhausted all the effective instructional techniques already available to us.

Essentially our problem is to determine who should go to college. The admissions policies of certain of the private colleges tend to admit only students who are brilliant in everything. Until recently many of our state-supported institutions have implied by their admissions requirements that only those students who are stupid in everything should be rejected. Both of these policies ignore the phenomenon of intra-individual differences as distinguished from inter-individual differences. It is well known that a person may show great differences in the extent to which he possesses various abilities and competencies. It seems to me admissions policies should reflect this phenomenon.

We know that society needs a lot of different kinds of people. No one person needs to excel in a lot of different kinds of things. But very superior people tend to be superior in almost everything, and very inferior people tend to be inferior in almost everything. Actually these are mere tautologies because it is the fact that a person is superior in everything that makes him seem very superior, and the fact that a person is inferior in everything that makes him seem inferior. It is in the large middle group between the very superior and the very inferior where there is room for a person to excel in one thing and not in another or to show great variation in his abilities. Therefore, the average person may be superior in some things and relatively inferior in others.

We cannot observe the frantic recruiting competition of large industrial organizations on our college campuses without being convinced of the varied and voluminous demands which society is placing upon the crops of graduates from our higher educational institutions. We cannot afford to be profligate with our student resources on the one hand so that we throw away all but those who excel in everything. Neither can we afford to be profligate with our educational resources so that we squander them on individuals who have little aptitude or promise for any particular thing.

However, if we consider that there are many demands for many different kinds of abilities, then the problem of differential guidance in college becomes extremely important, and it is only on the basis of differential prediction of success that differential guidance can be offered. Differential guidance and differential prediction of success should be the keystone of admissions policies. The question is not whether a person will be able to succeed in almost any subject he might attempt in college, neither is it whether he will be only slightly better than poor in everything. The real question is whether there are certain areas in which he might succeed in college and presumably make an important contribution to society.

Differential method explained

I do not believe, therefore, that we can have intelligent and rational admissions policies, nor sound guidance, nor effective utilization of our manpower resources, without an effective program of differential prediction of success in college. And what do we mean by the differential prediction of success? Rather obviously we do not mean simply predicting overall success in college irrespective of what a person happens to major in, but rather we mean predicting success specifically with reference to each of a number of different areas of study.

When we talk about predicting success we imply that we have a set of predictor variables from which to predict. In the limiting case we may have only one predictor variable. If we have

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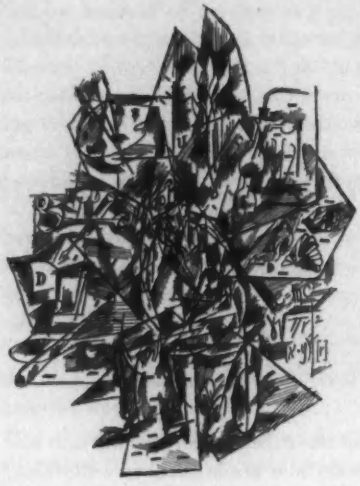
only one predictor variable then it is possible to determine empirically how well we can predict success in each of a number of criterion activities. We may have a single test score by means of which we attempt to make multiple predictions. Certainly, however, such a test cannot predict success differentially among these criteria because the correlations among the different predictions must by necessity be perfect, since they are all linear functions of the test score.

We must, therefore, consider the more typical case of a battery of predictor variables which may consist of a number of different kinds of tests. By means of multiple regression techniques we can find how well this battery of tests will predict success in each of a number of different criteria such as different areas of study in college. Techniques readily available to us will also determine the best set of regression weights for predicting success in each criterion area from the single set of predictor variables.

Instead of trying to get the best absolute prediction of success from a battery of tests for each of a number of different criteria, we may rather wish to get a set of predictions which will estimate the *differences* between all possible pairs of criterion variables as accurately as possible. The first case we have called the problem of multiple absolute prediction.[1] The second case we have called the problem of multiple differential prediction.[2]

It can be shown that for a given battery of tests or predictors the weights used for best multiple absolute prediction are precisely those used for multiple differential prediction. The conventional least-square multiple regression techniques apply to the case of multiple absolute prediction as well as to that of multiple differential prediction for the same set of predictor and criterion variables.[3] However, if our problem is *not* to get the best possible prediction of success for each of a number of different criterion activities but rather to predict differences in the criterion activities, then we can prove that a different set of tests will serve the latter purpose better than the former.



Essentially, for the problem of multiple absolute prediction we may well have one or more general factors involved in the criterion variables which make for high intercorrelations among them. In differential prediction we are not concerned with these general factors but only with the specific and group factors which differentiate the criterion abilities from one another. It is for this reason that techniques for constructing predictor batteries for multiple absolute prediction and multiple differential prediction tend to yield different sets of measures. In the case of a society which purports to utilize optimally all of its human resources the technique of multiple differential prediction would seem more appropriate than that of multiple absolute prediction.

There are other kinds of prediction with which we may be concerned in using a multiple set of predictors and a multiple set of criterion variables. One of these types of multiple prediction is involved in the problem of optimal classification. This is sometimes called differential classification as distinguished from differential prediction. In the problem of optimal classification we are concerned with allocating individuals to a number of different activities so that the overall success of the group will be a maximum. The problems in defining overall maximum success are not simple and in themselves involve some rather technical considerations. However, the problem of optimal classification is basic to the problem of maximizing the effective use of human resources.

The essential difference between the optimal classification problem and the differential prediction problem may be indicated briefly. In the differential prediction problem we are concerned primarily with predicting a person's relative success in each of a number of different criterion activities. But the differential classification problem involves further restrictions. We cannot assume that each person should engage in the activity in which he has the most ability, aptitude, and other personal qualities relevant to success in that activity. If persons were assigned on this basis there would in general be a wide disparity between the number of people assigned to the various activities and the number of persons required by society to perform those activities.

The optimal classification problem, therefore, requires us to place a restriction on the number of persons assigned to a particular activity. The problem then is, how can people be assigned to the various activities so that the quotas or requirements are met and yet so that the overall expected proficiency or effectiveness of the total group will be a maximum?

As yet there is no entirely satisfactory solution to the optimal classification problem. However, a great deal of work has been done on it and the next few years may yield some practical solutions. These should prove extremely useful in guidance work at colleges and universities. If it is possible to obtain reasonably satisfactory estimates of the approximate number of persons who should be trained in each of a number of different areas, and if reasonable predictions of their success in these areas could be made before admission to college, then each person's prediction of success could be adjusted or modified according to the demand for persons in that category. Then, if persons tended to follow the indications of their adjusted predictions, we could expect that approximately the correct number of persons would select each line of training and the overall chances of their success would be increased.

The question has been asked me fre-

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[1] See Paul Horst, "A technique for the development of a multiple absolute prediction battery," *Psychological Monographs*, No. 390, 1955.

[2] See Paul Horst, "A technique for the development of a differential prediction battery," *Psychological Monographs*, No. 380, 1954.

[3] *Ibid.*

quently, "Do you really think that it is possible practically to get differential prediction of success in college?" This question always comes to me as something of a shock because it asks essentially, "Do I really think that there are some people who can do some things better than they can do other things?"

Well, of course I think so, and so do most people. You don't need a college education to know this, even though people with college educations sometimes ask the question. One of the things on which the theory and practice of factor analysis is based is the fact that some people can do some things better than they can do other things. The experimental studies in factor analysis are replete with the evidence that the number of statistically independent and socially significant things which some people can do better than they can do other things may be as high as 30 or 40.

Or we can go directly to criterion variables themselves, such as academic activities. Even a common-sense type of analysis would lead us to believe that more than just verbal and mathematical ability are involved in scholastic aptitudes. Certainly we know that some people can use words effectively on a public platform or in social intercourse but cannot write well, other people can write well but cannot speak well. We also know that some people can use words effectively in narration but are poor in the presentation of abstract ideas. People who are good with figures may be poor in algebra, people who are good in algebra may loathe geometry, or be entirely inept with spatial relations or with factors involving mechanical comprehension.

In the field of career activities it is obvious that some people can do some jobs better than they can do other jobs even in the same economic or social status levels. Few would seriously argue that these differences are based solely on training and experience.

So far the evidence for differential ability which we have considered has been of an *a priori* nature. We may consider briefly some experimental evidence from the University of Washington Differential Grade Prediction Program.[4] In this program, college course grades in each of 33 different college course areas are estimated from 15 different predictor variables. The answer to the question of how effective these predictions are from the differential point of view must be based on two considerations. First, how well do the predictions agree with actual success? But, as we pointed out earlier, the intercorrelations of these predictions will be unity if based on a single test or a single set of weights. Second, it is therefore important to know also the intercorrelations of these predicted course grades.

To state briefly the results, average validity for the 33 predicted criteria on the experimental group was .58, with a range from .33 to .89. As was to be expected on subsequent cross-validation these validities dropped considerably. The average validity for the cross-validation group was .45, with a range from .13 to .71. Although cross-validation studies are frequently not reported, it is believed that in most of those quoted, cross-validities of .45 are reasonably high for this type of criterion. The average intercorrelation of the 33 different predicted criteria was .67. Admittedly, .67 is not a low average intercorrelation but on the other hand it is far from unity. When we consider that the cross-validation of .45 is probably a lower limit to what we may expect in future research and the intercorrelation of .67 an upper limit of what we may expect for the intercorrelations of the predicted criteria, the prospect for useful differential prediction based on current experimental results appears encouraging.

The question of how we may evaluate college success is a perennial one. Without apology, we recommend that actual course grades provide the best available criterion of success in college. It would only be threshing over old straw to point out the well-known limitations of college grades. However, the problem of these limitations is not to be solved by looking for other criteria such as personality improvement, qualities of leadership, and other vague and high-flown phrases, however useful they may be in securing research grants or increasing college endowments. We have consistently taken the position that when better criteria of college success are available, they will consist of better grading methods.

Forecasts course area grades

What, then, specifically are those grades which we might wish to predict? Certainly, a most interesting and useful grade is overall college grade-point average. This, however, gives us no indication of differential success. It would be of limited use only for admissions purposes and of no use whatever for guidance purposes. It would indicate only how successful the person might be expected to be in college provided he had no specific guidance, and it would not help to indicate what particular courses of study he should choose.

Another type of grade-point average which may be considered is the overall university average for subgroups according to majors. This, I think, is an unsatisfactory criterion for any attempt at differential prediction. Each major requires courses in many different subject areas. Such a criterion may not be much better than overall university grade-point average and would result in highly correlated predicted grade-point averages. Furthermore, the number of cases on which the weighting formulas can be based is limited to the numbers of persons in each major.

The only feasible method on the basis of which to develop a differential grade prediction program is, in my opinion, to establish criteria by course areas. The grade-point average in each

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[4] See Paul Horst, "The differential prediction of success in various college course areas," *College and University*, July, 1956; also Paul Horst, "The prediction of academic achievement in college," *University of Washington College of Education Record*, March 1956.

course should constitute the fundamental criterion variable. I realize that this presents problems in deciding just what to call a course area. Special problems arise in the case of particular schools or colleges such as engineering and business administration. Should we, for example, break down engineering into different kinds of engineering, such as chemical, mechanical, aeronautical, ceramic, and metallurgical? Should we break down business administration into personnel, accounting, finance, transportation, and so on? The answer to this question must be based primarily upon the number of cases available on which to establish the prediction formulas. If the course areas are broken down too finely, there may not be enough cases in some of them on which to establish reliable regression weights.

To reduce the number of criterion variables it may be desirable to define groups of course areas in which there is some reason to believe that the courses are fairly homogeneous. For example, one might group the social sciences, the biological sciences, the physical sciences, foreign languages, and so forth. Admittedly, there are problems in effecting these groupings, but I do not believe they are insurmountable. One of the chief objections from the student's point of view to forming groups of course areas is the problem of deciding which particular course in the group should constitute the major. For example, if the group in question is the social sciences, the student may well want to know whether his prediction in psychology is better than in sociology or anthropology.

Bases for prediction

The kinds of predictor variables which may be considered in a differential grade prediction program are as broad as the availability of measures. The essential requirement of a good differential predictor is that it shall predict well for one or for a few criteria and poorly for others. If it predicts well for all criteria, it is in effect predicting the part common or general to most of the criteria and so will not be useful for differential prediction.

In the past, high school grade-point average has been used for predicting college success. It is true that this has

been found to correlate well with overall college grade-point average, but here again it is not useful for differential prediction. In the University of Washington program, we have therefore broken down high school grade-point average into six different course areas: English, mathematics, social science, natural science, foreign languages, and electives. It is only when the grades are broken down in this way that they can serve any useful purpose for differential prediction.

In addition to high school grades, personal data can also be used. So far, we have used only the factors of age and sex, but I suspect that other biographical data variables may also be useful for differential prediction.

In the way of actual tests, we have relied so far on conventional aptitude and achievement tests published by commercial and educational institutions. We do not attempt to distinguish sharply between aptitude and achievement tests, for we believe essentially that achievement tests measure what students learn in school and aptitude tests measure what students learn out of school.

It is still a hope, although founded on some research, that personality measures will contribute to the differential prediction of success in college. We have concluded a study involving 700 students in 20 different course areas in which the Strong, the Kuder, and the Michigan Vocabulary Test were included along with the American Council on Education test and eight of the Educational Testing Service's Cooperative tests.[5] (The Michigan Vocabulary Test is sometimes regarded as primarily a test of interest.)

It is interesting to note that, in this study involving 30 different variables, all five parts of the Michigan Vocabulary Profile and four of the 14 Strong scales were selected while three of the eight Cooperative tests failed to be selected using the predictor selection technique which we have developed.[6] Although the results to date look promising for personality and interest test material it has not yet been possible to analyze the available data sufficiently nor to gather follow-up data to report definitive results.

To sketch briefly the research on which our present differential grade prediction program is based, we started by developing a technique for the selection of a battery of tests which would yield maximum differential prediction efficiency for any subset of predictors of specified size.[7] On a group of 2,000 freshmen entering in 1949, 27 predictor variables were available. These included seven tests from the Guilford-Zimmerman Aptitude Survey, the two parts of the ACE test, three parts of the Cooperative English Test Form OM, and six of the Cooperative General Achievement Tests. In addition the variables of age and sex were also included, as were high school grade-point averages in English, mathematics, foreign language, social studies, natural science, and electives.

At the end of four years the university grade-point average of each student who took courses in one or more of 33 different university subject areas was calculated. These subject areas ranged from anthropology through zoology. The subject areas were those in which at least 50 persons had taken course work during their four years of college. On the basis of these 33 different criterion variables and the 27 predictor variables, the predictor selection technique[8] was used to select the 16 best predictors from the point of view of differential prediction efficiency.

Differential prediction efficiency is

[5] Glen E. Maier, *The contribution of interest test scores to differential academic prediction*, unpublished Ph.D. dissertation, University of Washington, 1957.

[6] Horst, *op. cit.*, *Psychological Monographs*, No. 380, 1954.

[7] *Ibid.*

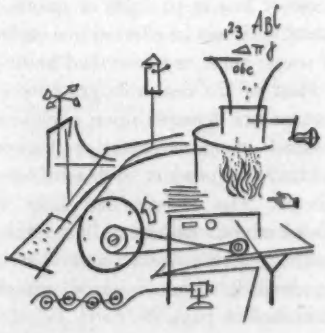
[8] *Ibid.*

defined as the difference between the average variance and the average covariance of the predicted criterion measures. These predicted variances and covariances are based on standard scores for both predictor and criterion measures. The tests which were selected by the technique were verbal comprehension, numerical operations, mechanical knowledge, English usage, spelling, ACE quantitative, Co-op social studies part 2, and Co-op mathematics part 1. In addition to these, age, sex, and most of the high school grade-point variables were also selected.

The prediction formulas based on this group and the selected predictors were used to provide differential grade predictions for the entering class of 1953. At the end of three years a cross-validity was carried out on the grade prediction and the actual achieved grades in the various course areas. As indicated earlier, an average cross-validity of .45 was obtained. The intercorrelation of the predicted grade-point averages was calculated for only the first group and this, as I have indicated, was .67.

We are constantly confronted with requests from other institutions and individuals asking how they might take advantage of our results or engage in a similar program. One of the main considerations is to make sure that the institution is large enough so that enough cases will be available to give stable results for most of the important subject areas. Otherwise, it will not be possible to establish and validate a dependable differential prediction program.

The question of how long after the tests are administered they should be validated cannot be answered simply. Many of the validation studies on prediction of college success are based on freshman grade-point averages, sometimes at the end of the first semester or first quarter. I do not think this is a long enough time on which to base a differential grade prediction program. Perhaps at the end of two years enough course grades in enough different course areas would be available to provide reasonably sound criterion measures for differential prediction purposes. I think, however, that it is better to wait until the end of the third year to attempt to get validity data. The results from the third and fourth year will usually be so similar that it would not be worth while waiting until the end of the fourth year to complete the necessary research.



In any case, a big problem from the point of view of clerical labor is that of collecting and processing the criterion data. The sheer job of segregating grades by course areas and calculating the averages for each individual student involves a great deal of time and expense, and no study should be undertaken unless the availability of such data can be guaranteed. One of the biggest handicaps to the development of differential prediction studies is the lack of availability of these criterion data and the complicated problems involved in processing them. Obviously, therefore, the development of an effective differential grade prediction program requires very close cooperation and assistance on the part of the registrar's office.

Before closing I would like to contrast the differential prediction approach with a current and highly publicized approach. This approach is concerned with and identified by such phrases as "National Merit," "Talent Search," "The Gifted Student," and so on. My own feeling is that if we are concerned primarily with having our institutions of higher learning make their maximum contributions to the best utilization of our human resources, then these programs are missing the mark.

Is a talent search really necessary? Do we need to go to great lengths to identify the gifted or exceptional student? I think not. I think these students who excel in everything, far from having to be searched for, cannot possibly be hidden. They stand out in their high schools and in their communities so that anyone could name them. Suppose, however, that they don't have to be searched for, that they were discovered away back in grammar school, should we not go to great lengths to make it possible for them to go to college? I suspect that even here we are on the wrong track. I would guess that 95 per cent of the students identified and subsidized by the formal programs now operating would go to college without these programs' aid.

Meeting manpower shortages

But even assuming that we couldn't find these students and that they would not go to college without special subsidies, what social function would the program serve? Obviously, they would make available to society the trained abilities of these talented students, and certainly society needs these talents. But what is the number of these students? According to available statistics perhaps not more than one in 100 of potential college material is selected by these programs.

This number is so small compared to the needs of society that we must look elsewhere for the real supply. The gifted student, it is true, could be a success in almost everything. But in real life he will not be doing almost everything; he has to choose between being a doctor or a lawyer or an engineer or a physicist. He cannot be all of these things at once. Therefore, from the career point of view, the gifted student has no advantage over the student who has special talents in a single area. And certainly there are vastly more students who have special abilities in one or two areas than there are those who have special abilities in most of the areas which are in short supply.

It seems to me, therefore, that in order to supply the demands of society the real need is not to get finer screens and more powerful microscopes to locate fewer people who are better in everything, but rather to provide programs which are designed to identify the highest abilities of that vast number of students who do have important contributions to make to society, if only their special abilities can be identified early and encouraged and trained. This is the real problem which we need to attack, and not the problem of identifying the few who can do everything extremely well or the few who can do nothing at all well.

You can *get into college*

False alarm in the press

BY T. LESLIE MacMITCHELL

According to many magazines and newspapers, it is virtually impossible for students to gain admission to college today. "Getting into college," reported *The New York Times*, "has become a major trial for much of the nation's youth.... It is not uncommon for the better known colleges to have from five to 10 applications for every candidate accepted." In actual practice there are *few*, if any, colleges in this country which have such a surplus of applications but there are *many* colleges which would welcome a larger number of candidates.

Much of the misunderstanding concerning the admissions situation may be traced to statistics in which student inquiries and actual applications for admission are neither differentiated nor explained in terms of admissions procedures. For example, although one institution this year received some 18,000 inquiries, only 5,600 of these students filed applications for admission. This college, seeking a class of fewer than 1,000 students, would then appear to be accepting only one out of every six applicants. This is not the case, however, for of the 5,600 applications many lacked such essentials as a health record, test scores, or other information required by the college. Hence, only 3,400 completed applications were actually processed for admission. Of the 3,400 candidates, 1,800 (somewhat more than 50 per cent) were admitted *but* only 900 showed up to enroll when classes began.

Yet *Scholastic Koto*, a magazine distributed by the National Scholastic Press Association, says, "Be forewarned and take heed, the squeeze is on for space on virtually every university campus in the country. Today's zooming enrollments constitute what a national news weekly recently called a crisis of major proportions.... Entrance requirements throughout the country are more rugged than ever before and college waiting lines are becoming a lot longer." Another article in the same paper presents two paradoxical statements by the same author: "College classrooms are already filled to capacity and there are far more students on hand than professors to teach them, far more students than chairs to sit in. The pressures brought to bear on all colleges to increase their enrollments are tremendous today—and they will be getting worse tomorrow." "Actually it is not as tough as rumor may lead you to believe. Colleges want you and others like you... they are anxious to help you get an education and enjoy yourself while you are doing it." How can young people come to logical conclusions in the selection of a college when faced with confusing and erroneous information like this?

Last January *Newsweek* reported, "Right now the enrollment pressure has begun to build up alarmingly.... Almost every boy or girl now applies to at least three colleges, some to six. One notable case mimeographed applications to 26 institutions (sadly none accepted him)." Apparently it did not occur to the author to consider that there probably was good reason for the 26 rejections. Nor does he seem to have been aware of the fact that ad-

continued on page 26

College candor can dispel confusion

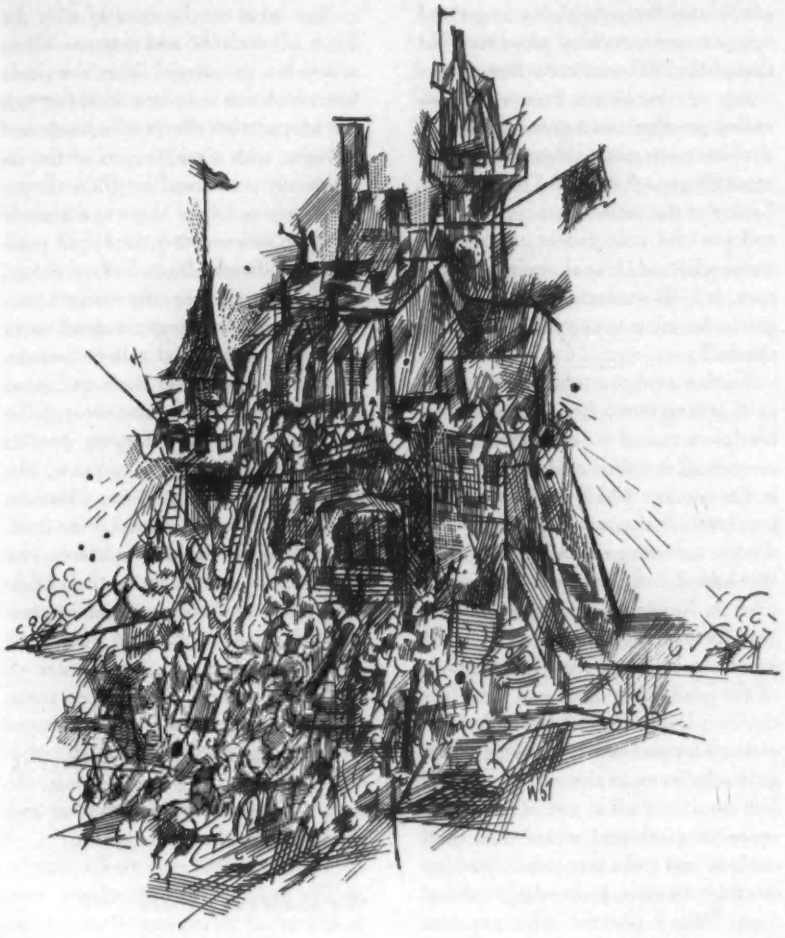
BY JOHN M. DUGGAN

As the ratio of the number of applicants to the number of admissions continues to increase, there is justifiable concern on the part of some admissions officers and guidance counselors about the increasing strain on the admissions process. Until such time as radically different admissions procedures are developed, there must be some stopgap measures employed to insure full consideration of worthy candidates and, at the same time, safeguard the mechanics of college admission against breakdown from overload.

The colleges which engage in selective admissions can be separated into two classes: those which strive to keep the number of applicants fixed while working to improve the quality of applicant and those which do not fear an increased number of applicants provided that greater numbers result in better quality. The problem is essentially the same in both instances: to encourage the likely candidate and discourage the candidate who is either low in promise or casual in intent. This can be effected in a variety of ways; some are described here.

Most of the desirable pre-selection that occurs depends upon a two-way channel of communication between guidance counselors and admissions officers. The college can help the school adviser understand its requirements, predilections, and current standards in various ways. It can, for

continued on page 28



Students are rejecting colleges

BY JOHN F. GUMMERE

The *New York Times*, tabulating the number of applicants or inquiries for admission to various colleges in September 1957, gives figures such as these:

Institution	*Applicants*	*Size of freshman class*
Dartmouth College	3,800	725
Harvard College	3,350	1,150
University of Massachusetts	9,951	1,363
Pennsylvania State University	10,000	3,400
Princeton University	4,500	765
Yale University	4,000	1,010

The stiff competition for admission to colleges is all too well known; it leads to multiple applications for admission. The individual student, or his family, or his college guidance counselor in school, fearful of finding him without a college acceptance at the end of the year, arrange for applications to be made at a number of places. There have been seniors in some schools who have applied at 20 colleges. It is like loading the old shotgun with nuts and bolts and pellets, hoping that when you fire it, you will at least hit something. Hence, the impressive figures tabulated above give a false impression.

Now compare these figures with these publicly stated facts: one top-notch small college, a college to which any able boy should be glad to go, as it has a well-earned reputation for excellence, found that no less than 38 per cent of those whom it accepted for admission declined. Similarly, a first-rate Ivy League university—again, a place to which any candidate ought to be happy to gain admission—had 37 per cent rejections. Another good college had 55 per cent of their applicants refuse admission when it was offered.

These figures, which are typical, not unusual, clearly indicate that the multiple-application evil is becoming a menace. Every application has to be conscientiously studied by the admissions officers of such first-rate institutions. Yet these same officials have to gamble on the percentage of acceptances they will get.

The most bizarre situations are found. One college, when the time limit for acceptances drew near, found that the percentage of acceptances was alarmingly low. A number of offers were at once sent to applicants who had been put on a waiting list, in an effort to make sure that the freshman class would be full. Then, quite unexpectedly, a wave of acceptances from candidates formerly offered admission was followed by another wave of acceptances from the new group just offered admission and there was a freshman class larger by almost 100 than had been planned.

Another college found in June that it needed 100 more freshmen, and the admissions office was told to find them. What could a poor admissions officer do to fill those places at such a time? Scrape the bottom of the barrel? Offer admission to applicants long since classed as not up to standard?

Young people are unbelievably lax and careless about accepting or rejecting college acceptances. The director of admissions at one first-rate university told me that after the deadline for answering offers of admission, there were 200 boys who had not even bothered to reply!

Add to this the startling fact that in the summer of 1957, in one state, there were a dozen good colleges whose freshman classes were not yet filled, and that one excellent university opened with 50 places vacant.

All these are grim facts. A tremendous waste of time and effort is involved.

Yet there is a remedy for this situation. It lies in more extensive and more careful guidance in the secondary

continued on page 27

False alarm—

continued from page 24

missions requirements are normally designed to admit only those students who stand a relatively good chance of success in the college of their choice.

If it is true that it is difficult to get into college today, if large numbers of students have been frozen out of the classroom, it would seem that school counselors must have had considerable difficulty in placing students in college. The writer has during the past year talked with and visited approximately 200 counselors in Westchester, Nassau, and Suffolk Counties in the metropolitan New York area, and with counselors in the Midwest and the South, and on the West Coast. He has yet to talk to a counselor who has had any difficulty, this year or last, in placing students in college. True, in a few instances, counselors had trouble placing a few students with marginal records, but here the question was really whether the student should even think of college. A survey of some 200 colleges disclosed that 150 had room for more students this year. When asked how many more students they could have accommodated, the total figure given was close to 10,000.

Pressure on only 40 colleges

The fright that has been aroused in parents and students during the past year about difficulties of gaining admission to college has been one of the greatest frauds perpetrated on the American public in the opinion of the writer. Actually there are only about 40 institutions to which admission is relatively difficult at the present time, most of them the "prestige" colleges whose reputations, acquired through the years, are based on very high academic standards. These colleges have always practiced a high degree of selection, have been popular choices of students for many years, and will probably always be more difficult to enter than the typical American college or university. Institutions of higher learning other than these 40 would welcome both more and better qualified applicants for admission and even the prestige institutions constantly seek good candidates through highly organized, low-pressure recruiting programs. "Although the 1957 enrollment has jammed many of the better known and so-called 'prestige' institutions and caused problems on many other campuses," according to a *New York Times* survey, "many of the nation's more than 1,800 colleges and universities can still accommodate additional students. However, not all students will be able to gain admission to the college of their choice."

Further evidence that the uncertainty of getting into college has been popularly overrated is contained in the records of a number of high schools in the country which send at least 65 per cent of their college-bound students to the college of their first choice. One school under tremendous pressure from its Nassau County community to have its students gain admission to college, succeeded in getting 123 members of the graduating class into their first choice colleges. It should be added that concern for students who are unable to gain admission to the college of their first choice is often out of place because in most such cases their first choices tend to be unrealistic. In commenting on this, one college official said, "Many persons who inquired about admission had not submitted applications and many who applied could not meet admissions standards." President Carroll V. Newsom in his annual report to the trustees of New York University noted, "There is a temporary shortage of qualified students in the country's colleges and universities. Many students, not properly suited for advanced study, are seeking entrance into institutions of higher learning. Many high school graduates can derive little from traditional college programs."

Leslie MacMitchell is Assistant to the President and Visiting Representative on the staff of the College Board.

Now what can be done to allay the fears of students and parents about admission to college? This is a problem which can only be solved through the cooperative efforts of schools and colleges, with a major part of the responsibility assumed by the colleges, since they and they alone can provide accurate information to dispel present misunderstandings. Unfortunately, newspaper and magazine writers have taken bits of information about small segments of the total college population and in applying them to higher education as a whole have created distortions which have thrown parents and students into a state of panic. The result has been multiple applications and "ghostly" candidates by the thousands. Colleges can do much to correct this situation by describing their freshman classes in terms of such characteristics as the number of completed applications received, the number of students accepted, the number registered, the distribution of test scores among accepted students, the distribution of their school rank in class, the nature of their school activities, and their geographical distribution.

Test scores not decisive

If such information were available, parents, students, and counselors would be in a position to judge the merit of magazine and newspaper articles, and it is unlikely that such statements as the following would ever appear in print: "The better colleges want the test scores in the neighborhood of 600. Anything much below that is considered by high school admissions officers to be an evil omen for a rejection slip." —*The New York Times.* "Each testee knows he ought to get about 600 on every college board if he wants to make one of the big name colleges. He also knows that even if he does there is every likelihood he won't get into his number one choice. If he drops down to around 400, his chances are dim anywhere."—*Time.* One has only to scan existing test score information[1] on accepted and non-accepted candidates within groups of colleges to see that colleges accept students whose College Board scores cover a wide range. Students scoring highest on

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[1] *College Board Scores No. 2,* page 122 ff.

the Scholastic Aptitude Test and/or Achievement Tests do not have a 100 per cent chance of gaining admission, nor do relatively low scores amount to automatic rejection. The distribution of scores reported by one selective men's college shows that it accepts about 50 per cent of the students who have high verbal SAT scores, suggesting that the school record, rank in class, geographical distribution, the school recommendation, and participation in student activities are also most important in the prediction of a prospective student's success in the college program. Certainly colleges are looking for students with high scores just as they are looking for students who rank well in their classes and present outstanding school records. But no one factor, as far as the writer has been able to learn by observing admissions operations, is the *sole* factor in evaluating a student's admissibility. Writers who suggest that students must have Board test scores of at least 600 ignore the fact that two-thirds of the students who take the tests receive scores between 400 and 600 and that these students, by and large, do go to college.

In summary, colleges with few exceptions are far from crowded or even swamped with applications for admission. Although it is true more students will go to college as time goes on because of increased birth rates during the war and post-war years and because of economic and social pressures for education beyond the secondary school, the admissions picture today is far from acute. The "crisis in admissions" arises primarily because of a failure in communication.

Students rejecting—

continued from page 25

school. Close cooperation with parents, pupils, and admissions officers can result in very strict limitation of the number of applications. Best of all, it can bring about an understanding between school and college in a large number of cases where (a) the student clearly has chosen a certain college; (b) his abilities and achievements are such as to make him acceptable and a good college risk for that particular institution. The understanding is that if the student continues to perform as well as he has in the past, the college will offer him a place and he will accept it.

This procedure, as already stated, sharply reduces the number of applications. It enables the admissions officer to know exactly where he stands with such applicants and cuts down the chances he has to take as to the percentage of acceptances of places offered.

An important reduction in applications can be made by eliminating multiple applications to colleges which are similar in type and in requirements—for example: Amherst College, Williams College, and Wesleyan University; or Harvard College, Yale University, and Princeton University. Any fair-minded person knows that any of the three colleges in each group is first class and that the chances are that an applicant who can meet the requirements of one of them probably will meet the requirements of all of them. In fact, one might well say that if you qualify for any one you can very likely qualify for all six.

The guidance officer ought to get the applicant to settle on *one* of these institutions on the basis of his preference after a visit, or on any other sensible basis. The officer can then properly tell the college admissions officer that the candidate's choice among the possibilities has been made after careful consideration and that he will definitely accept admission if it is offered.

Today every admissions officer can pick and choose among a great many properly qualified applicants. Isn't it reasonable for him to pick someone who has had the right guidance and who has made an intelligent selection, and about whom there is no guesswork as to acceptance of a place if offered?

Careful guidance can bring about this desirable state of affairs as I can testify after 16 years of college placement experience. For instance, in all these years only one candidate from our school has refused an acceptance from Princeton, a university to which we send boys every year. This is anything but an accident. We know what Princeton wants, we know which boys ought to go there and which ones can meet the requirements.

Early guidance assures acceptance

This year is no exception to the school's general experience in settling matters early. Thanks to visits to colleges, visits from college admissions officers, information forwarded to colleges, conferences with parents and pupils, and careful guidance, half the graduating class will have settled on a single choice by November and this choice, barring earthquakes or other major catastrophes, will result in their admission to college.

To be sure, this result is secured after a good deal of planning. In the tenth grade and in the spring of the eleventh grade, preliminary work is done. The full program of the College Board aptitude and achievement tests is taken in May of the junior year. Conferences with parents and students are held in May, June, July, and August.

But the results fully justify the time spent. The evil of multiple applications to comparable institutions is eliminated. Pupils are enabled to make intelligent choices. Admissions officers are spared the time and effort which are wasted when an applicant rejects an admission which has been offered. They are also spared, at least in the case of these boys, the risky guessing at the percentage of acceptances, a thing which ages these conscientious and hard-working men before their time.

Facts, figures, and experience show the problem for exactly what it is. They also show how to solve it.

John F. Gummere has been headmaster of the William Penn Charter School in Germantown, Philadelphia, Pennsylvania, since 1942.

College candor—

continued from page 24

example, publish freshman class characteristics pamphlets, guidance newsletters, or other literature which aid in defining the kind of applicant who is a successful candidate. While the information contained in these publications varies from college to college, the pertinent information usually includes a full description of the current freshman class; a statement describing admissions policy; the total number of applicants; the number admitted; the breakdown by public-private school background, scholarship awards, grade distribution (including numbers of honor students and failures), and geography; a statement on how little or how much importance test scores have; and the distribution of students' scores on the College Board tests. The score results are usually more helpful if they are presented in a form which lists the per cent of candidates within a given score range who are *accepted* by the college. This is more meaningful information than a table which merely shows the enrolled student score distribution, since the per cent accepted table gives the guidance officer a clearer picture of the type of selection employed, as well as some insight into the total candidate population of the college. The accompanying table illustrates data which would constitute welcome information for school advisers.

From such tables, other things being equal, an adviser can estimate the probability of acceptance for a candidate with a given set of scores and a given rank in class. Another helpful practice of colleges is the distribution to the schools of the grades of their graduates. From such information a guidance officer can gauge the grade-point differential between his school and a college and thereby feel more confident about the types of students who will be successful at that college.

Although the class characteristics type of literature seems to be one of the most effective aids for reducing the number of unsuccessful applications to the colleges which publish them, there are other means of encouragement and discouragement. Personal dealings between the college and the candidate in his junior year or early in his senior year can aid the candidate to determine the advisability of applying to a college. A program of early and vigorous visiting by the college can establish rapport between college, school, and candidate. The preliminary rating of candidates by admissions officers is a growing practice. This rating is usually done with the guidance officer, or principal, or headmaster, who uses the information in advising the candidate. For example, an A rating might mean admission assured; a B rating, good prospect; a C rating, apply elsewhere. This system assumes, of course, some authority on the part of the college representative and also assumes that he and the admissions committee are in tune.

The college may, where possible, require an interview on campus where a college official can make a frank appraisal of the candidate's prospects. Or alumni representatives can interview candidates locally. Alumni representatives should be well supplied with the kinds of information necessary to the successful completion of the task.

On the mechanical side of the admissions process, there are other factors which usually result in a decline in applications. Each of these measures has to be shaped by the college's admissions policy. It is, for example, completely predictable that an application fee will result in fewer applications, especially among scholarship seekers. Whether a college wishes this result is a decision which it must make before introducing the fee.

The Scholastic Aptitude Test requirement results in about a 10 per cent average drop in applicants, although the intellectual quality of the candidate ordinarily improves. The use of the Achievement Tests multiplies this effect. A split requirement, such as the January SAT and the March Achievement Tests, has a similar result.

Another practice, designed to reduce the number of credentials to be scrutinized by an admissions committee, involves a preliminary screening of candidates before they formally fill out an application. When a request for an application is received, the college asks for a three-year transcript and whatever test scores are available. In its appraisal the college determines whether it wishes to continue consideration of the individual. If the candidate has a chance of admission (the encouraging odds having been administratively determined), he is sent an application blank. If his chances are slight, or nonexistent, he is advised to apply elsewhere.

Of all of these measures, both mechanical and informational, the most promising and rational seems to be the type which explains the college to the guidance officer. The conventional statements published by colleges are often quite useless to a school adviser who is forced to make predictions about a candidate's chances of acceptance at a college without reference to adequate information on the kinds of decisions which have been made in the past and the factors involved in these admissions or rejections. Colleges which are seriously concerned with the amount of labor involved in processing clearly unqualified candidates can ease their own burden if they share as much pertinent information as is available with those responsible for advising college-bound students.

Applicants' rank in class range (in percentiles)	*Per cent of applicants accepted*	*Applicants' test score range*	*Per cent of applicants accepted*				
					Foreign language test		
			SAT-V	*SAT-M*	*2 yrs.*	*3 yrs.*	*4 yrs.*
90-99	92.50	750-800	92.00	84.00	100.00	90.00	85.00
80-89	88.75	700-749	88.69	80.00	92.00	89.42	80.00

John M. Duggan, the College Board's Director of Test Interpretation, was formerly assistant dean of freshmen at Yale University.

BY WALLACE McDONALD

Equalizing scholarship opportunities

How and why Ivy League colleges come to agreement on financial aid offers to applicants they have in common

I must confess that in the springtime, about the second week in May, I feel a certain lack of sympathy toward scholarship winners who tell me that they are unhappy with the size of their awards. I must further confess that in the springtime, about the second week in May, I feel a certain lack of warmth and friendliness toward so-called "competing colleges" who find it possible to award larger scholarships than we do, or on the other hand, even toward colleges who complain about the generosity of our awards.

Two examples, I am sure, will suffice. Scholarship award notices to next year's freshmen have all been mailed out, and four days afterwards the letter at the very top of the morning mail reads:

"Dear Mr. McDonald:

I cannot tell you how happy and proud I was to receive your letter telling me that I had won a Harvard Gordon McKay National Scholarship in Engineering, and that I was one of 10 students selected from 1,500 applicants from all over the United States for this high honor. All my life I have wanted to come to your college. However, it now appears this will be impossible unless you and your committee can reconsider the amount of my scholarship. Three other colleges have already awarded me scholarships, all of which are at least $300 more than your Gordon McKay National Scholarship in Engineering. I look forward to hearing from you promptly, and I know you will inform the committee how important their decision is to my future.

Yours sincerely,
John Jones"

After a mildly profane utterance, a secretary is told to locate Jones' folder. Privately, I hope she won't be able to find it for at least two days.

Suddenly the telephone buzzes. A long distance, person-to-person call from Cleveland. From whom? He used to be an Overseer of the College. I sat next to him last fall at that big dinner out there. This can't be scholarship business. Could it be that he has a son applying for admission? Well, put him on.

"Hello, McDonald?"

"Hello there!"

"Thought I'd phone since I remembered last fall you told me you were in charge of scholarships back there. Well, I told you then I'd gone on the board of trustees of one of the colleges out here. I just got back from a meeting last night and I thought I'd call, because it seems to me the president down there has a justifiable complaint. He says that year after year they make their admission and scholarship decisions and mail out the notices and the students accept the scholarship awards, and then along comes Harvard and offers these fellows twice the amount of money. He's fed up—called it outrageous buying and raiding—so I wondered if you'd mind dropping me a letter explaining the whole thing so I can understand it, and then I'll try and clear all this up the next time I see him. Thanks a lot, McDonald. Look forward to hearing from you."

Should I go on with the morning mail, or take a crack at this letter to the distinguished trustee, or a better idea, should I go down and see how the admissions returns are coming?

Quite honestly, although I lack sympathy and warmth and friendliness in the month of May, I should be and am grateful that the number of office headaches in Cambridge resulting from instances of so-called "competitive bidding" steadily declines. The number of complaints about the size of scholarship awards, particularly in the very cases where winners have also received scholarships from our natural rivals, has been reduced. This happy trend, without doubt, is the direct result of close cooperation and consultation with the scholarship officers of these natural rivals, and of our practice of equalizing stipends for mutual scholarship winners prior to notification.

I should like to outline a bit of the history of this cooperation, most of which amounts to legend, and to describe in some detail how, more recently, all-day meetings of several colleges to consider as many as 1,000 joint candidates prior to award notification have been arranged and run off.

Prior to the 1930's virtually all college scholarships were set in increments of full tuition, half tuition, and quarter tuition, and the most embellished college awards rarely ran higher than about $400 or $500. Suddenly, however, in the middle '30's, several colleges on the eastern seaboard made a concerted effort to alter radically the makeup—particularly the geographical makeup—of their student bodies. National or regional scholarship pro-

Wallace McDonald, director of freshman scholarships at Harvard College, delivered this paper at the annual CSS meeting October 31.

grams were suddenly established and announced in attractive brochures. The scholarship stipends, it was explained, could run as high as full college expenses, and would include such extras as travel costs. The old tuition or half-tuition pattern began to give way to a new concept of stipends set in close relation to actual financial need.

Traveling salesmen representing these colleges which were trying to become national in character roamed far and wide and encouraged applications from the very same able, attractive candidates in each remote corner of the country. These raw recruits must have seen that they were being sought eagerly by several rival colleges. Naturally, some prospects speculated that two or three colleges might just attempt to outbid each other financially for a student's academic services.

It was difficult in the late 1930's for a school principal or guidance counselor to serve as an intermediary for a new and remote college candidate in the same fashion that schoolmasters of the so-called "feeder schools"—public or private—may have done with eastern college scholarship offices in earlier years. More often than not, the local graduate who had played host to the college's traveling representative tended to be the point of contact between the interested applicant and the admissions and scholarship office.

Legendary origin in thirties

Legend has it that the first cases of consultation between Princeton and Yale and Harvard over scholarship cases occurred when excited graduates began to interfere with the orderly process of college admission. Telephone calls came from halfway across the country from graduates of one institution reporting that they had learned that the rival institution planned to give a $1,000 scholarship to Sam Smith. Now, what did the old Alma Mater plan to do? Because if it wasn't going to offer at least $1,000 or more, the local alumni were already passing the hat and they were arranging to help Sam, "the best boy they had seen in the last 10 years," to the tune of at least $1,100 or $1,200.

To the eternal credit of the admissions officers who worked in Princeton

Winners dissatisfied with awards

and in New Haven and in Cambridge in the 1930's, they never hesitated to cooperate when they faced common problems. During the off-season, they frequently had one-day meetings; they worked together through the College Board; and during the pressure periods each spring they telephoned each other when difficulties arose.

But to return to Sam Smith, our imaginary "best boy seen in the last 10 years." After the alumnus' telephone call had been completed, undoubtedly Sam's school record, his College Board test results, and his parents' financial statement were all located by an office secretary. It was remotely possible that Sam looked marginal even for admission, much less worthy of $1,100 or $1,200.

It is my understanding that in cases like this, particularly those involving rumors or cross-accusations sent in by alumni, telephone calls were quickly placed from Princeton to New Haven or from New Haven to Cambridge so that the facts could be established. Sooner or later a case arose where the colleges agreed to equalize their scholarship awards to a worthy candidate in order to avoid the kind of disastrous auction-bidding suggested by the alumnus who was about to pass the hat for $1,100.

By the 1940's, significant progress had been made. The Princeton, Yale, and Harvard scholarship offices were exchanging in advance of their spring committee meetings their final lists of scholarship applicants. When scholarship meetings were completed, each scholarship officer placed a two or three-hour long-distance telephone call to his counterpart and began to go down the long list of some 200 or 300 names. He was empowered by his committee to adjust any scholarship stipend in order to make it equivalent to an award from one or both of the other colleges. In award letters, the colleges indicated that they had consulted in order that their awards would in no sense be financially competitive.

By the 1950's the three colleges had agreed to have their scholarship officers meet for a full day in New Haven to consider a docket of all mutual scholarship applicants. The job of preparing this long docket rotated among the three officers. Means of putting IBM machines to use were eventually found, and in 1955 and 1956 the College Scholarship Service contributed valuably to the preparation of the docket.

For this meeting, there was no binding set of rules or regulations. There was not even written agreement as to procedure. On the prepared docket appeared the names of all mutual scholarship candidates, and to the right of the names were columns for each college in which were indicated scholarship awards, jobs, and/or loans, when awarded by the individual college committees in the previous few days.

In the early 1950's there were about 500 names on a docket. By 1956 the figure had gone over 1,000, and of course, with more good candidates to pick from, there tended to be less duplication of awards by the three individual colleges. In any case, the overlap of awards ran no higher than 250 to 300 and the large number of applicants on the docket still took less than a single working day to consider.

In a great majority of cases, the colleges' stipends tended to run close together—within a range of $100 to $150—even though each of the three colleges continued to use its own particular method of measuring financial need. It took little time to persuade a colleague to increase or reduce an award by $100, or for two representatives to move toward each other by $50.

In other cases, where there might be a sizable discrepancy between the awards of two colleges—$400 or $500 or more—the meetings slowed down. Out would come the parents' financial statements, the computation and calculation sheets, and what was described as a complicated or difficult case would get fairly thorough discussion. Often,

when a case involved only two of the three colleges, the neutral scholarship officer could contribute a good deal to the final agreement.

It was always clearly understood in any case, particularly one involving a sizable discrepancy in recommended stipends, that after all the discussion had been completed the colleges could agree to disagree on the size of an appropriate award. Each year, in two or three cases out of the more than 500 or 1,000 there was such disagreement, and I, for one, was persuaded that it gave each institution some token evidence of its independence and freedom from any compulsion to bargain in these meetings.

These colleges were not alone in their work and experience in this area. For several years, Amherst, Bowdoin, Dartmouth, Wesleyan, and Williams have met to compare and adjust scholarship stipends on overlapping candidates. The University of Pennsylvania and Princeton now run down a list of their joint scholarship candidates by the telephone method, and in all likelihood scholarship officers over the country have from time to time compared notes on common candidates.

Last January, five colleges—Brown, Dartmouth, the Massachusetts Institute of Technology, Princeton, and Harvard, because they had considerable overlap of candidates—agreed to have scholarship officers or representatives meet in Cambridge about April 29 to consider the stipends on all the scholarship applicants they had in common. About April 20 the latest information on each candidate, that is, an estimate of his financial need, or the scholarship award recommendation or the actual financial aid voted, was forwarded by each college to Cambridge, where a 53-page docket was compiled.

Traveling salesmen competed for students

In order to expedite the meetings, the representatives of Dartmouth, Princeton, and Harvard met for one evening session to consider the cases in which only these three colleges were involved. The following morning the meetings were resumed with the scholarship officers from Brown and the Massachusetts Institute of Technology present, and before 5:00 p.m. that day action had been completed on the entire docket of some 1,000 cases.

Value of consultations

Little disagreement arose during the sessions in spite of the haggard appearance of the representatives of the five colleges. They seemed satisfied that one day set aside for this purpose at the worst time of the year could be worth while.

So much for the legendary history and the actual experience and method of colleges consulting with each other regarding scholarship stipends for mutual applicants. Is it worth it? What about all the extra paperwork, preparing the docket and arranging a meeting, during the worst possible period of the year? Who benefits? Merely the scholarship office? What about the applicant? Couldn't this practice of comparing stipends operate as an elaborate conspiracy to prevent the candidate from winning one really big scholarship? And finally, how do alumni react to all of this? After all, they were the enthusiasts who have a small share of the responsibility or the credit for originating this practice.

My views, of course, must be qualified. I represent one scholarship office. I was only one participant in the meetings. However, no one who shared the experience last spring dissents from my strong endorsement of the value of these meetings. With regard to my theory about the value of the meetings, or how the idea could be extended, I must carefully qualify the following thoughts as my own.

I indicated at the outset that I placed a high value on the elimination of springtime grievances and complaints, and this certainly is a surface result of these consultations and meetings. But I should like to emphasize one aspect, somewhat unnoticed, that I feel is the real value of such consultations to all of us.

On more than one occasion, the chairman and some members of our faculty admissions and scholarship committee in Cambridge have reminded me that they consider it absolutely impossible for me to calculate financial need within $25 or $50 of what the statistician or measurement expert might term "true need," and believe strongly that if I come within $100 or $200 of true need, I am doing a good job. If I come closer, I am merely lucky.

If this is true, and I suggest it is, then all five of the colleges which joined in the meetings last spring, given the same scholarship case, could calculate financial need and come up with five different need figures—figures which might vary by as much as $150 or $250, particularly if the case involved some complications. Consequently I suggest that the first benefit, the true benefit, of these meetings is not pinpoint accuracy, but agreement —agreement on a single need figure which is probably as close as we can ever come to the true one.

Once agreement on financial need is reached and is evident, the old-fashioned complaints of other colleges, the complaints from schools, from alumni, and finally, from candidates and their families (no longer bewildered by financial aid in varying amounts) diminish in extraordinary fashion. One reason is that the applicant, now the scholarship winner, free from conflicting amounts of aid, will accept the award at the college he wants to attend. Finally, and most important, it seems to me that the results will give clear indications to the public, particularly to the parents of college-bound students, that colleges are cooperating seriously and are working together closely so that there will be an increasing and evident consistency in their financial aid policies and practices.

It would not be quite honest if I told you that we had encountered no difficulties as a result of the Princeton-Yale-Harvard meetings over the years, or from our five-college meeting last spring. There are a few, it seems to me, but with care they can be eliminated.

I know only too well, for example,

what it is to live for four years with what we call an "embellished award"—that is, one higher than justified by actual need. There is always the chance that I might incorrectly adjust our stipend upward $400 or $500 in a difficult disagreement or discrepancy case, and then the student, without knowing how grateful he should really be, accepts the inflated award. Each year, for the next three years, when scholarships are renewed, it is my task to explain once again to my committee just how it all happened.

Some of our more imaginative alumni are not sure that they are 100 per cent in favor of such consultation procedures. We have had reports that some have gone so far as to advise outstanding candidates not to apply to any other college with whom we meet or consult. The alumni's chances of persuading us to give big scholarships, they say, are better if the candidates apply only to us.

Finally, there are policy questions as well as matters of detail which it is advisable for colleges to work out in conjunction with such meetings. For example, what is the size of the expense budget for a scholarship student at each college? Are there standard amounts for job and loan offers? What about particular types of awards or name or corporate scholarships, which tend to have little relation in some cases to financial need? The remarkable thing to me is that last spring, with five colleges, four different budgets, and a variety of policies, we were impressed at the end of the day by the degree of agreement and accomplishment, not by minor differences or difficulties.

Moreover, it is reassuring to report that Brown, Columbia, Cornell, Dartmouth, Harvard, the University of Pennsylvania, Princeton, and Yale very recently agreed that their scholarship officers should meet this winter to consult and discuss common policies and procedures in the face of marked tuition increases in the near future. We also hope to discuss the possibility in the future of agreeing not only on financial need and total financial aid with respect to common candidates, but also on balancing the proportions of actual gift, job, and loan aid offered them.

Now, can this practice of consultation be extended and utilized by other colleges in the future? I think so. Where there is a sizable overlap of scholarship applicants among colleges, meetings would be feasible and might be worth a try. The College Scholarship Service's consolidated reports are worth consulting for the evidence they contain as to which colleges have a number of scholarship applicants in common. Whatever clerical know-how and shortcuts we have learned in preparing for these meetings, we would gladly pass on to any and all colleges.

We know, though, that the average CSS applicant applies to just over two colleges. There is not much future in a whole series of five-college full-day meetings taking place all over the United States next April. But I wonder whether the University of Pennsylvania and Princeton practice of consulting by telephone on a short list of candidates may not prove the best device to be adopted by colleges facing a comparable overlap.

Expense and distance may rule out the telephone, but in any case College A can send a list of overlap candidates (compiled from the college designations on the CSS forms) by ordinary mail with a list of recommended stipends sometime in March or April to College B. College B could check their stipend calculations on this list, and somehow I have faith from our experience that agreement can be reached on stipends for a list of as many as 25 or 30 applicants. After all, it is important to reach agreement only on those cases where financial aid is actually to be awarded, and in many, many cases a list of 25 overlapping applicants would quickly reduce itself to a half dozen overlapping awards. Final agreement on a difficult case might involve the telephone, with the college which eventually gets the student paying the bill.

Though methods differed, results agreed

Let me put it this way. From my point of view, it would be extremely valuable during the coming year to consult and compare notes on scholarship winners with other college scholarship officers. In a case in which Harvard planned to make a scholarship award, I think it important and worth while to consult with every college involved before notifying the scholarship winner.

Spring report suggested

Two weeks ago, I filled out and returned to another college the current CSS report form on last spring's applicants. I could not help but think that it would have been equally simple and far more sensible if I had filled it out and sent it off last April when it would have contained information useful for setting stipends. By September the information had become stale, and was interesting only if it confirmed alumni gossip or suspected misdeeds.

By exchanging this stipend information in advance of awarding scholarships, no college sacrifices its independence or freedom of action. If our faculty committee makes a decision to award tuition, expenses, board, room, books, laundry, and a convertible to an applicant, I am sure they have no intention of allowing four or even 20 colleges to stand in the way.

At the same time, that committee, fully aware of my fallibility, has a strong conviction that if my recommended stipend for a certain scholarship candidate is $50 or $100 more or less than the scholarship award he will receive from another college, I had better act quickly and do something about it. The committee doubts that I can be that accurate, and they are persuaded that the two colleges should be in agreement.

In spite of my earlier confession, I can honestly say that in the springtime before the scholarship letters have gone out in the second week of May, agreements reached with scholarship officers of other colleges have been warm and friendly, always with a feeling of sympathy for the scholarship applicant.

College Board member colleges

Check (✓) indicates participants in the College Scholarship Service. Dot (•) indicates subscribers to the May 21 Candidates Reply Date Agreement for 1958 (see page 2). An asterisk (*) following a college's name means it does not include scholarship applicants under the Candidates Reply Date Agreement.

•✓Adelphi College
✓Agnes Scott College
•✓Albertus Magnus College*
•✓Alfred University
✓Allegheny College
American International College
✓Amherst College
•✓Annhurst College*
•✓Antioch College
•✓Bard College
•✓Barnard College
✓Bates College
•✓Beaver College
✓Beloit College
•✓Bennington College
Boston College
✓Boston University
✓Bowdoin College
✓Brandeis University
•✓Brown University
•✓Bryn Mawr College
•✓Bucknell University*
• Caldwell College*
•✓California Institute of Technology
•✓Carleton College*
✓Carnegie Institute of Technology
• Catholic University of America*
✓Cedar Crest College
•✓Centre College of Kentucky
•✓Chatham College
•✓Chestnut Hill College*
•✓Claremont Men's College
•✓Clark University (Mass.)
•✓Clarkson College of Technology
•✓Colby College
✓Colgate University
•✓College of Mount Saint Vincent*
• College of New Rochelle*
•✓College of Notre Dame of Maryland*
• College of Saint Elizabeth*
• College of Saint Rose*
College of the Holy Cross
• College of William and Mary
✓College of Wooster
•✓Colorado College*
•✓Columbia College (N.Y.)
•✓Connecticut College
• Cooper Union
•✓Cornell University
✓Dartmouth College
•✓Davidson College*
•✓Denison University
▪ DePauw University
✓Dickinson College
•✓Douglass College
Drew University
Duke University
•✓Dunbarton College of Holy Cross*
• D'Youville College*
• Elmira College*
•✓Emmanuel College
✓Emory University
•✓Fordham College*
•✓Franklin and Marshall College*
•✓Furman University
Georgetown University
▪ George Washington University
Georgia Institute of Technology
•✓Georgian Court College*
•✓Gettysburg College
•✓Goucher College
✓Grinnell College
✓Hamilton College
Hampden-Sydney College
•✓Harvard College
•✓Haverford College
•✓Hobart College and William Smith College*
•✓Hollins College
• Hood College*
•✓Immaculata College*
▪ Immaculate Heart College*
•✓Iona College
•✓Jackson College for Women
Kalamazoo College
✓Kenyon College
Keuka College
✓Knox College
•✓Lafayette College*
•✓Lake Erie College
✓Lake Forest College
• La Salle College
•✓Lawrence College*
•✓Lehigh University
•✓Lewis and Clark College
•✓Manhattan College
•✓Manhattanville College of the Sacred Heart
•✓Mary Baldwin College
•✓Marymount College (N.Y.)*
•✓Marywood College*
•✓Massachusetts Institute of Technology
• McGill University
Mercer University
•✓Michigan State University*
•✓Middlebury College*
•✓Mills College
• Moravian College*
•✓Mount Holyoke College
✓Muhlenberg College
Muskingum College
Nazareth College (N.Y.)
• Newark College of Engineering*
•✓Newcomb College of Tulane University*
•✓Newton College of the Sacred Heart
✓New York University
•✓Northeastern University
✓Northwestern University
•✓Notre Dame College of Staten Island*
•✓Occidental College
✓Ohio Wesleyan University
•✓Pembroke College in Brown University
Pennsylvania State University
•✓Pomona College
•✓Princeton University
▪ Providence College
▪ Queens College (N.C.)
•✓Radcliffe College
•✓Randolph-Macon Woman's College
•✓Reed College
•✓Regis College (Mass.)
•✓Rensselaer Polytechnic Institute
Rice Institute
•✓Rollins College
•✓Rosemont College*
• Russell Sage College*
•✓Rutgers, The State University of New Jersey
•✓Saint Joseph College (Conn.)
•✓Saint Joseph College (Md.)
• Saint Joseph's College (Pa.)*
▪ St. Joseph's College for Women*
✓St. Lawrence University
•✓Saint Mary's College (Ind.)*
• Salem College (N.C.)*
•✓Sarah Lawrence College
•✓Scripps College
• Seton Hill College*
Shorter College (Ga.)
•✓Simmons College
•✓Skidmore College
•✓Smith College
Southwestern at Memphis
•✓Stanford University
•✓Stevens Institute of Technology
•✓Swarthmore College
•✓Sweet Briar College
•✓Syracuse University
Thiel College
✓Trinity College (Conn.)
• Trinity College (Wash., D.C.)*
✓Tufts College of Tufts University
•✓Tulane University*
•✓Union College (N.Y.)*
• United States Air Force Academy
• United States Merchant Marine Academy
• United States Military Academy
United States Naval Academy
• University of California
•✓University of Chicago
• University of Colorado
University of Connecticut
▪ University of Denver*
University of Georgia
✓University of Massachusetts
•✓University of Michigan
University of Notre Dame
•✓University of Pennsylvania
•✓University of Redlands
• University of Rhode Island*
•✓University of Rochester
• University of San Francisco*
•✓University of Southern California
•✓University of the South*
• University of Vermont
• University of Virginia
•✓Ursinus College*
Valparaiso University
•✓Vassar College
▪ Villanova University*
Wabash College
•✓Wagner Lutheran College
✓Washington and Jefferson College
•✓Washington and Lee University*
•✓Wellesley College
•✓Wells College
✓Wesleyan University
•✓Western College for Women
•✓Western Reserve University
•✓Wheaton College (Mass.)
•✓Wheelock College*
•✓Whitman College
•✓Whittier College
✓Williams College
•✓Wilson College
▪ Worcester Polytechnic Institute
•✓Yale University
•✓Yeshiva University

Non-member colleges participating in CSS

Case Institute of Technology
Colby Junior College
College of Puget Sound
Hofstra College
Illinois College
Illinois Wesleyan University
John Carroll University
Juniata College
La Verne College
Monmouth College
Oberlin College
Polytechnic Institute of Brooklyn
Pfeiffer College
Pratt Institute
Rhode Island School of Design
St. John's College (Md.)
St. Joseph's College (Ind.)
Stetson University
Transylvania College
University of New Hampshire
University of Pittsburgh
Upsala College
Vanderbilt University
Wake Forest College
Westminster College (Pa.)
Willamette University
Wilmington College (Ohio)

NEWS OF THE COLLEGE SCHOLARSHIP SERVICE

Cooperative efforts reported

Based on regional ties: Varying kinds and degrees of cooperation between regional groups of CSS colleges in joint scholarship activities were described by four speakers at the annual meeting of the CSS held in New York City on October 31, the day following the fall meeting of the College Board.

Wallace McDonald, director of freshman scholarships at Harvard College, explained the origin and development of annual consultations among Ivy League colleges to equalize financial aid offers made by them to candidates they have in common (see page 29).

Two programs in which groups of colleges have agreed on certain matters of common policy, terminology, and practice were outlined. Edward Sanders, dean of students and dean of admissions at Pomona College, described the program of the 13 colleges represented on the West Coast Committee of the College Board, while Ben F. Cameron, Jr., director of admissions at the University of the South, discussed the more recent scholarship agreement entered into by 11 southern colleges.

Mary E. Chase, executive vice president and director of admission at Wellesley College, described the Seven College Conference Scholarship Program in which eastern women's colleges jointly offer 21 scholarships for girls from 14 western states.

Copies of the three latter papers are available on request to the College Board.

Talent searching proposed: Among matters discussed at the annual meeting following the four addresses were the holding of regional CSS meetings in the spring to supplement the annual meetings each fall, the possibility of introducing individual or joint college efforts to locate talented students among the underprivileged and explain financial aid opportunities to them, and the need for the Service to take a more active part in explaining to schools and parents the role of financial need and other basic aspects of college financial aid programs.

Joint poster issued: A scholarship poster presenting basic information about the CSS and serving as a notice of opportunities for aid at all participating colleges, which it listed, was mailed to guidance directors at 16,000 schools this fall. Included with it were copies of the parents' statement form and the CSS descriptive leaflet.

Service's fourth year begins

171 colleges participate: A total of 171 colleges, 27 of which are not members of the College Board, have enrolled as participants in the College Scholarship Service for 1957-58, the Service's fourth year of operations (see list, page 33). Among last year's 157 participants were 26 non-member colleges, while the 130 which participated in the preceding year included 15 non-members.

As participants, the colleges subscribe to the principle of basing the selection of award recipients on ability but the size of awards on financial need and require parents of applicants for awards to fill out and file with the Service its Parents' Confidential Statement form.

Expect forms from 40,000: In its fourth year, the CSS expects to receive, inspect for consistency and completeness, and send to colleges copies of statement forms from 40,000 parents. It also expects to make and forward to colleges at least 80,000 duplicates of the forms.

Forms submitted by the 35,011 parents who filed them last year brought the grand total handled by the CSS in its first three years to more than 87,000. Although 89 per cent of the copies of last year's 35,011 forms went to the 157 participating colleges, copies were sent in all to 639 colleges.

"School" introduced: To help develop insight and skill on the part of scholarship officers in computing need from the data given on the parents' statement form, a two-day "computation school" was introduced by the CSS early in December. Limited to an enrollment of one representative from each of 50 participating colleges, the school sessions were held in Princeton, New Jersey.

College officers and members of the CSS staff from the director's office at the College Board and the operations office at the Educational Testing Service in Princeton served as "teachers."

35 colleges order: Some 35 colleges have ordered computations of estimated need from the CSS for 1957-58 as against 81 which ordered them last year. As a result, the volume of computations performed by the CSS is expected to drop from last year's 13,100 to about 9,000 for this year.

Computation aids offered

"Juries" resume in January: From January 10 through April 18, volunteer scholarship officers will meet each week in Princeton as members of CSS computation "juries" to consider unusual and difficult need analysis cases. As in the past two years, the juries will convene Thursday evenings and continue deliberations through Friday.

Each college participant is urged to send representatives to at least one of the jury meetings.

"Template" computation tried: In a new section of its recently issued 1957-58 *Computation Manual*, the CSS reported on experiments with a method of "template" computation that, if used judiciously, can reduce computation time by two-thirds with results "encouragingly similar" to those produced by its regular procedures.

In this method a sheet with appropriately spaced holes is placed over the parent's statement and thus used to mask out all but certain key information from which a rapid need estimation is derived. The CSS recommends the method for further trial by colleges themselves.